

Moons, Myths and Man

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A REINTERPRETATION

by

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Note

Throughout this book, any comments of the author, *inside* a passage actually quoted, are indicated by *square* brackets

Introduction

THE Moon captures the interest of both layman and scientist. To the latter, moreover, the Moon is an even greater puzzle than to the former. The peculiarities of its age, its motion, its size, its density, its material constitution, its surface features and then history, cause greater differences in opinion than astronomical textbooks usually reveal. And the astronomers, who have always material enough to prove what they say, are not the only learned men to be perplexed by the Moon: the mythologists are in a much more precarious position. There are a great number of lunar and other cosmic myths, and the pantheon of gods contains a host of lunar deities. But how is the mythologist to reconcile his ideas with those of the astronomer? how is he to account for the fact that certain mythological traits point to the Moon—without being regarded as an idle romancer? For the mythologist has never been recognized by orthodox scientific thought.

This book endeavours to bring about a kind of synthesis between the findings of mythology and astronomy, or, rather, between that part of mythology which is concerned with lunar and other cosmic myths, and that part of astronomy which tries to penetrate the mystery of the Moon. For this it is necessary to introduce an element which has hitherto been unknown in mythological works: a theory of the origin of our Moon, and its fate in past and future.

The author of this book has no lunar theory of his own to propound. He bases his deductions on the teachings of the

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'Cosmic Ice Theory' This latest of cosmogonic theories, he believes, explains the relationship between the Moon and Myth not only in a thoroughly satisfactory, but also in an entirely novel and even revolutionary way

With this theory as a basis for our investigations, we can find a *definite* meaning in the myths—with what success the following pages will show and the interested reader will determine.

Hans Hoerbiger

Hans Hoerbiger, the originator of the 'Cosmic Ice Theory', was an Austrian machine-builder of renown. He was born in a suburb of Vienna on 29 November, 1860. After graduating with honours from the Technical College, he became, at the age of thirty, the master constructor of one of the biggest Austrian engineering works. In 1894 his valuable inventions of new types of valves brought him to the forefront of European engineers. He was also one of the first constructors of an effective aeroplane (1896). Shortly afterwards he founded a firm of his own to exploit his inventions and improvements.

From September 1894 also dates his idea to make use of technical experiences and considerations in the explanation of the riddles of the Universe. The result of his investigations was the *Cosmic Ice Theory*, which was published in 1913, in collaboration with Philipp Fauth, a German selenologist of high rank. The Great War retarded the immediate discussion of the new theory, but a second edition, which appeared in 1925, started a battle of books for and against it.

Introduction

Since then a great and growing literature (in German) has appeared,¹ discussing the various aspects of the Cosmic Ice Theory. The short introduction to the basic principles of that theory which follows is its first exposition in English.

Hans Hoerbiger died on 11 October, 1931, and is buried in the little village churchyard of Mauer near Vienna, his last home.

¹Standard work: *Hoerbiger's Glacial-Kosmogonie* 2nd edition Leipzig, 1925 (Imperial 8vo, pp. 772, with 212 diagrams), Pigal *Dissertation* (a short survey), Voigt *Eis, ein Wellenbaustoff* (Glacial introduction), Behm *Plantentod und Lebenswende* (Palaeontology), Hinzpeter *Bildung der Hochgebirge* (Geology), Hinzpeter *Urwesen von Kosmos und Erde* (Mythology), Fischer *Weltwenden* (Mythology), Fauth *Mondesschicksal* (Selenology), Waitz *Kosmische Ursachen des Wetters* (Meteorology), Behm *Hoerbiger, ein Schicksal* (Biography of Hoerbiger).

Basic Principles of the Cosmic Ice Theory

The Cosmic Ice Theory considers the Moon to be a metallo-mineral body covered with a sphere of ice. It also contends that our satellite was captured out of transerrestrial space where, not so very long ago, it existed as an independent planet.

As these views are so utterly opposed to the current views of selenology, according to which the Moon is a child of the Earth and a grandchild of the Sun, while its surface consists of vitreous materials, we must give a short review of the teachings of the Cosmic Ice Theory. Its leading ideas are:

The cosmic building stuff consists of light gases and heavy materials, chiefly metals. The most important of the latter are iron and nickel, the most universal of the former are hydrogen and oxygen. The heavy cosmic materials are hot (or heatable) and form mass accumulations of different sizes—from cosmic 'dust' to super-giant suns. Hydrogen and oxygen exist in the universe in their natural combination, H_2O , water, in its cosmic form—ice.

When this 'Cosmic Ice' plunges into glowing stars the impact generates heat. Thermochemical decomposition splits the ice into its constituents. The oxygen is bound to the stellar matter, producing more heat.¹ The hydrogen is exhaled into space.² The star-matter-bound oxygen and

¹Cf. oxidation bands in sunspot spectra.

²Cf. the prominent hydrogen lines in the spectra of all stars.

Basic Principles of the Cosmic Ice Theory

the 'spatial' hydrogen form the vast stores out of which the Cosmic Ice is generated and its supplies depleted

Space is chiefly filled with hydrogen in a state of utmost rarefaction. Though inconceivably thin, this universal medium is nevertheless capable, in the course of 'astronomical' spans of time, of offering an appreciable resistance to bodies moving in it, and to forces using it as a conductor. It slows up, and finally stops, all bodies moving in it in 'straight' lines, rounds out and decreases all orbits, thus causing all revolving bodies to approach their mass-centres in fine spirals, and, at last, to unite with them,¹ and weakens, and ultimately annihilates, all forces.

As we have already hinted, the Cosmic Ice Theory regards all visible stars as consisting of glowing liquid matter, dense magma balls with no limitation as to mass—not extremely thin gas-spheres that cannot exceed about fifty times the mass of our Sun.

Light and size are evidences of 'cosmosocial' circumstances. Light (heat) presupposes fuel, size (mass) presupposes food. Stars which are able to gather great supplies of cosmic 'dust' (meteors or blocks of cosmic ice) will shine more brightly than those which are not. Capture of, and union with, companions swells the size of stars.

It is probable that beyond a certain limit an increase in mass does not cause a proportionate growth of gravitational power, just as there are technical limitations in the construction of efficient engines, for no binary system is known whose components are farther apart than three Neptune distances, or about 8,400 million miles. Thus the gravitational manifestations of a stellar body only reveal its *apparent* mass, its *actual* mass may only be inferred from its measured diameter and the density attributable to it from cosmogenetic considerations.

¹Cf. the orbits and the quick movement of the Mars satellites, especially of Phobos, and of the inner Jupiter and Saturn companions.

Basic Principles of the Cosmic Ice Theory

The universal motive powers are the collective force of gravitation and the distributive force of steam explosion. To these may be added the inertia forces of translation (straight flight) and revolution, the tidal influences of close cosmic bodies, resulting in rotation, and the dead resistance of the interstellar medium.

The dualism of cosmic matter—glowing stellar material and ice—and of power—collective gravitation and distributive explosion—creates ever new tensions and thus guarantees the eternity of cosmic life, engendering the primordial chaos, ordering it into a solar system, and finally bringing about again its end.

The Birth of our Solar System

Somewhere in that part of space which we now see contoured on the heavenly sphere by the stars of the constellation of Columba, the Dove, there existed, some three thousand million years ago, at a distance of something like two hundred thousand light-years, a stellar super-giant comparable in size to Betelgeuse, with a diameter equal to the orbit of Mars and a mass exceeding two hundred million times that of our Sun. This slowly moving, slowly rotating super-giant captured a smaller star, whose mass theoretically we consider to have been equal to about fifty thousand times that of our Sun. As the companion of an overwhelmingly superior stellar giant it largely lost its power to collect cosmic fuel, and so, living upon its heat-capital, it grew cold. Moving in the super-giant's corona, it finally became completely water-soaked and icebound.

The interstellar hydrogen medium is denser in the neighbourhood of mass-centres because of the continuous exhalation of hydrogen by the glowing body, it is also greatly augmented in density by the emanation of corpuscular corona matter—ice molecules, or unsplit steam, as well as molecular or atomic stellar material. The resistance experienced in this medium caused the companion to spiral closer and closer till, at last, it plunged tangentially into the super-giant.¹ There it sank till it reached strata of greater density than its own. The glowing matter immediately surrounding it lost its heat through the dissociation

¹Cf the phenomena offered by novae without 'gaseous' emanations.

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of the captive's ice-coat and condensed into a sphere of scoriaceous material which at the same time protected the giant from being cooled more extensively, and allowed the captive's water to get into the spheroidal state and to develop into a steam-bomb of gigantic dimensions and unimaginable explosive power

The preparation towards this phase may have taken many thousands or even ten-thousands of years. At last the continual overheating of the captive's water reached its limit (extremely high owing to the inconceivably great pressure in the super-giant's womb) and a tremendous stellar explosion took place. This explosion, out of equatorial latitudes, hurled out into space a considerable quantity of the super-giant's material, and all of the bomb's ¹. The greater part of this roughly cone-shaped sector fell back again, but those parts of the projectile cloud which were shot off with hyperbolic velocity (not so impossible, considering the various limitations to gravitation) were able to leave the super-giant's gravitational realm for good, and sped on with the remainder of their initial velocity. This inertia flight still carries the projectiles towards that part of space which is defined on the heavenly sphere by the stars of the constellations of Hercules and Lyra, with a velocity still amounting to about twelve miles per second.

When revolution began to order the chaotic cloud of the escaped material, the centrifugal momentum of the great majority of its constituents outweighed the feeble gravitational powers of the developing mass-centre. As long as this mass-centre was ill defined, only the outermost members of the revolving cloud broke loose and sped away along free tangential paths of their own. Then, as the mass-centre became more sharply defined, the inner members of the revolving disk also began to escape. When, at last,

¹If the phenomena offered by novae with 'gaseous' emanations

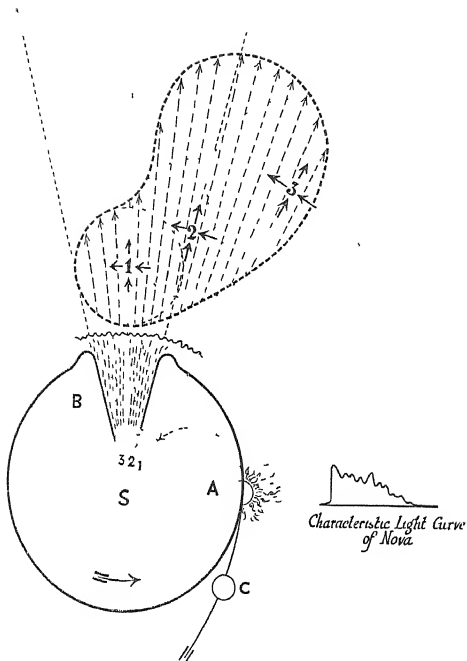


DIAGRAM I

The diagram shows two different phases in the birth of a stellar system the capture (A) and the generative explosion (B)

A The companion C plunges into the stellar giant S, which is viewed from its north pole. This causes an outburst of lower hotter stellar matter and gases. The star now shows the aspect of a nova (cf sketch of light curve)

B After the lapse of a long spell of time the companion explodes

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the masses in the near neighbourhood of the ideal mass-centre fused into a definite mass-centre, which is our present Sun, the young ruler found its realm practically deserted. It was peopled only by the protoplanets that were too small and too close to break the great and growing gravitational chains.

The bodies that escaped out of the rotating sidereal disk formed a broad belt of small suns which belongs genetically, though not gravitationally, to our solar system—the sidereal or telescopic galaxy. Its members are still moving along their tangential paths with a velocity of about three miles per second. This phenomenon has been called the 'expansion of the galactic system', although it is said to be due to other causes than the one described above. Measurements have confirmed the quasiplanetary nature of the sidereal galaxy by showing that the Sun is at rest relatively to the galactic girdle, and is situated practically in its centre. The dense star-crowds of the sidereal galaxy have spread so far out into space that a very considerable number of stars foreign to our 'Columban' system are very much nearer to the Sun. So Alpha Centauri, our best-known nearest neighbour, is only about four light-years away from us, the inner diameter of the sidereal-galactic ring, however, may be something like 50,000 light-years (Seeliger's idea of the apparent diameter of the galactic

and throws out a roughly conical section of the giant's material, thus constituting a nova of surpassing brilliance. This expulsion, which, of course, is continuous, is here shown in three ideal stages: stage 1 throws out the topmost lightest layers, stage 2 the intermediate ones, stage 3 the lowest heaviest ones. The first ejecta (circle 3 of the cloud,), coming from more rapidly rotating strata of the giant, will follow the rotational impulses inherent in them and swing over towards the left, thus overtaking the less powerfully moving masses from farther below (circle 2, and circle 1, ---). Hence a revolutionary trend will be started in the 'explosion cloud', which will thus in its earliest form ideally assume the shape here shown. The ejecta of stage 3 (circle 1) form the nucleus of the new world island.

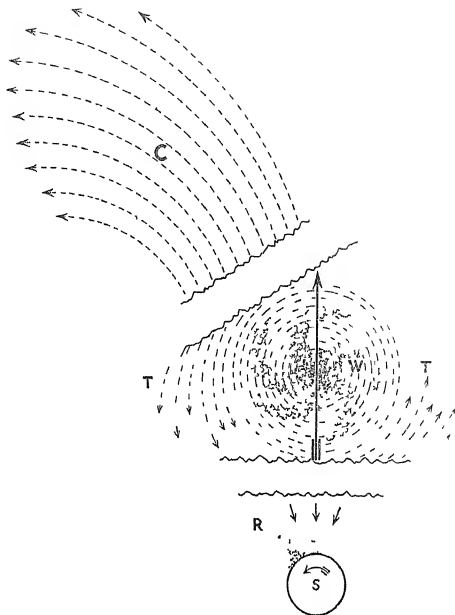


DIAGRAM 2

Developments in the projectile cloud some time after the explosion. Ejected masses of insufficient velocity (R) fall back to the stellar giant (S). The bulk of the masses thrown out in stages 2 and 3 of the explosion forms the sidero-solar whirl (W). The constituents of the topmost layers (C) have speeded on in front towards the left, far beyond the reach of the whirl. They will eventually appear as the 'condensations' in the telescopic galaxy. The overwhelming majority of the masses in the whirl W speed round the common centre only as

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system is 10,000 light-years only) Direct measurement of distance being impossible, all such computations are, of course, based upon cosmogenetic considerations only

The matter of the super-giant had been highly oxygenated The expelled material, experiencing an enormous relief of pressure, could not retain these vast oxygen stores, and exhaled prodigious quantities of the gas which enveloped the explosion cloud In rotating, this disk, acting like a turbine pump, sucked on axially and pressed out radially the 'spatial' hydrogen The two cosmic key gases, uniting, formed steam which froze into ice-crystals These agglomerated into blocks of different sizes which were urged out towards the circumference of the disk ¹ At last a vast ring of ice-bodies was formed which, spreading slowly, came to rest far outside the active solar gravitational realm Its inner diameter may be about 100 Neptune distances, that is, 3000 astronomical units, or 280 thousand million miles, its outer diameter three or four times as great

Gyroscopic laws force revolving bodies moving in a resisting medium to tilt their orbital plane perpendicularly against the line of movement At that early time when the sidereal galaxy was formed, the sidero-solar disk had a tilt of about five degrees, reckoned from the Sun's line of translation The glacial galaxy was formed much later, it has a tilt of about twenty-three degrees, reckoned from the apex of the solar movement Since that stage incompre-

¹Cf phenomena illustrated by spiral nebulae

long as the diffuse gravitational conditions obtaining there force them to do so At the point where their centrifugal momentum outweighs the centreward pull they leave the whirl in tangential paths (T), forming eventually a girdle of stars surrounding the ever thinning sidero-solar disk, the telescopic galaxy All the constituents of the whirl are enveloped in a dense cloud of oxygen, steam, and ice-molecules which are urged by rotation out towards the edge of the disk, breaking up into spiral arms The arrow in W indicates the direction of the translatory flight of the sidero-solar system

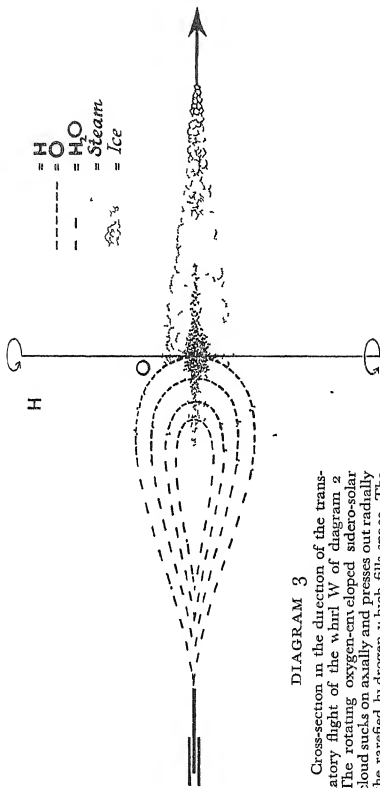


DIAGRAM 3

Cross-section in the direction of the translatory flight of the whirl W of diagram 2. The rotating oxygen-enveloped sidero-solar cloud sucks on axially and presses out radially the rarified hydrogen which fills space. The two key gases meeting, produce clouds of dust, which finally accrete into bigger blocks. Thus is built up a huge spiral aggregate, out of which glowing constituents of the sidero-solar whirl escape tangentially. Spiral nebulae and disk nebulae ('spindle nebulae'), when seen sharply edgewise, are frequently traversed by a dark canal, showing that the material at their circumference does not shine in its own light. From this we may infer that the material farther inside also shines only in borrowed light.

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hensible aeons of time have elapsed. The ecliptic, the general revolutionary plane of the planets, went on rearing itself up, at present it has a tilt of almost sixty degrees, it will only stop when it has reached its full extent and limit of ninety degrees.

Both the glacial and the sidereal galaxies belong—genetically, though no longer gravitationally—to our solar system and therefore take part in its proper movement through space. Since they no longer revolve, their tilts do not increase.

The 'light' glacial galaxy feels the resistance of the interstellar medium more than the 'heavy' Sun. Therefore the Sun no longer stands in the exact centre of the galactic ring, but is nearer to the front quadrant. Moreover, because of the tilt of the galactic ring, the Sun has risen some three degrees out of the galactic plane, and the ring, consequently, has ceased to form a greatest possible circle on the celestial sphere.

The interstellar medium has another important effect on the galactic ring: it retards or screens out its constituents. Those of more than three-quarters of the ring get lost in space, but most of those of the front quadrant are eventually overtaken by the outermost boundary spheres of the solar gravitational realm and now definitely fall towards the Sun. Blocks above a certain size will be able to reach the Sun and plunge deep below its surface, causing, on their dissolution, the sunspots and their accompanying phenomena: faculae, prominences, the corona, the zodiacal light, and the interplanetary medium.

As the planets—especially the outer giant planets, and among them chiefly Jupiter—speed through the conelike solipetal stream of galactic ice-blocks, then visible from the Earth as shooting stars, they disturb it and make its otherwise rather regular flow intermittent. The 'eleven year' period of solar activity, and also the similar periodicity of

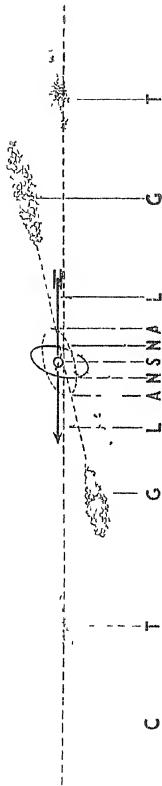


DIAGRAM 4

Section through the solar system in the line of its transitory movement S, the Sun, and centre of the system, its equator has a forward tilt of about 67 degrees reckoned from the line of the transitory movement, i.e. the original plane of flight of the sidero-solar whirl expelled at the explosion of the maternal stellar giant N the orbit of Neptune (radius 30 astronomical units or about 2796 million miles), at the same time practically the general plane of all planetary orbits, the ecliptic, it has a forward tilt of about 60 degrees A, outer limit of the transneptunian planets or asteroids, the tilt of the inner ones such as Pluto, practically conforming with that of Neptune the outer ones perhaps reaching a tilt of about 30 degrees L, limit of solar gravitation, outermost radius perhaps 25 Neptune distances G, glacial galaxy, its inner radius may be about 50 N, its outer radius may exceed 150 N its forward tilt is about 23 degrees T, telescopic galaxy of small suns, radius about 15,000-25,000 light-years in consequence of inertia The glacial galaxy moves through space with the Sun and its planets in consequence of inertia T, telescopic galaxy of small suns, radius about 15,000-25,000 light-years, tilt about 5 degrees These stars are still moving tangentially away from the centre of the original whirl, the Sun at speeds of two or three miles per second C, Stratonoff's condensations in the galaxy (see diagram 2), distance about 30,000-50,000 light-years, no tilt, as there never was any revolution in orbits

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various meteorological, electrical, and magnetic phenomena, thus find an easy explanation

Galactic blocks, captured by the Earth and dissolved in the atmosphere, cause the powerful, irregular, locally limited, meteorological phenomena, such as hailstorms, cloudbursts, tornadoes, typhoons, squalls, the unsplit steam exhaled by the sunspots, which freezes into molecular ice-dust soon after it has left the solar vents, and is borne out into space by the vehicular power of the light (corona matter, zodiacal light matter), causes the less powerful, regionally extensive, regular meteorological phenomena, such as the rainy seasons, and rains and snowfalls in general, also cirrus clouds, depressions, electrical and magnetic disturbances, aurora polaris, and so on

At the time of the ice formation in our solar system, the inner planets lay in the chief steam-generation area, the outer planets and 'planeticles' were situated in the ice-accretion districts. The latter, therefore, were quickly cooled, and they were able to capture enormous quantities of ice-bodies, until their size was greatly increased. Their densities show that they are little more than immense ice and water balls.

The inner planets, Mars, the Moon, the Earth, Venus, Mercury, consist of star-matter, and, with the exception of our Earth, they are completely covered with shoreless, icebound oceans. Mars is covered with an ocean that is about 250 miles deep, and the ice-coat of the Moon is over 135 miles thick, whereas the water supplies of our Earth are only equal to an average hydrosphere of a depth of little more than a mile and a half. This singular exception finds its explanation in the favourable position of our planet, which safeguards it from being hit by too many solipetal blocks and too great supplies of solifugal ice-dust, as well as in its size, and consequently great proper heat.

The explosive ejection out of a super-giant imparts a

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series of tensions to the expelled matter. It winds up the works that keep the new system going. After the chaotic whirl had resolved itself into an ordered world island, the tensions began to run down. The cause of this gravitational re-collection of matter is the resistance offered by the material space-filling medium, which becomes denser towards the mass-centre (solifugal ice-dust, and also hydrogen). This resistance does not allow the orbits of the planets to be re-entering curves, but makes them into spirals. The greater the size and mass of a planetary body moving in the interplanetary medium, the finer these spirals will be, smaller bodies, having a relatively big resistance-feeling surface and a relatively small resistance-opposing momentum, 'shrink' centrewards much more rapidly. Outer smaller planets will therefore always trespass upon the orbits of inner massier ones. They will be captured by them and become their satellites. Such capture must especially take place when the massy captor is at its aphelion and the weaker trespasser at its perihelion. Though the major axes of the planetary orbits swing round counterclockwise, on account of the resisting interplanetary medium, and with different speeds, such conjunctions are very frequent, cosmically speaking. If the perihelion of the trespasser is, as is usually the case, *outside* the captor's orbit, the satellite will move round its new taskmaster counterclockwise, like all satellites in our solar system. If, however, as may happen with very small planets, or asteroids, the trespasser's perihelion is *inside* the captor's orbit, the satellite will move round its new central body in the clockwise or retrogressive sense, like the outer Jupiter satellites, VI-IX, and the outermost Saturn satellite, Phoebe. The Uranus and Neptune satellites move retrogressively for mechanical reasons: they have tilted up their orbits owing to their revolving briskly in the interstellar medium.

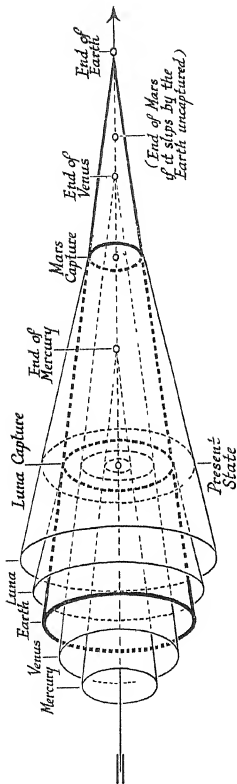


DIAGRAM 5

Orbital cones As the planets move in a resisting medium, their orbits are not re-entering circular ellipses, but elliptical spirals tending inward. Their progress through space is therefore not along never-ending cylinders, but along definitely limited cones. The 'height' of these planetary life-cones is determined by the shrinkage speed of each individual planet. When the cone of an outer, smaller, more rapidly spiraling planet intersects that of an inner one of smaller shrinkage speed—that is, when the orbit of the inner one is encroached upon, it will be captured as a satellite. This is what happened to the planet Luna shortly before the 'present state'. As capture does not stop centreward shrinkage, the satellite finally approaches its captor so closely that it is disintegrated and becomes united with it. Mars may be captured as the last and biggest of the Earth's satellites in the distant future. If it contrives to slip past the Earth, however, without being captured—eccentricity of orbit and mass may help it to this alternative fate—it will finally plunge into the Sun. This is also the destiny of the Earth as the last of the helioids. The same holds good for the neptoids, the outer planets not shown here. The diagram shows the state in the realm of the helioidic planets from some point of time in the past to the end of our Earth in the most distant future. The shrinkage cones are, of course, drawn excessively blunt (i.e. they should taper more), but the diagram will serve the point of illustrating the running down of the planetary clockwork of our system, which had been wound up in the great generative explosion.

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At present the planets do not seem to be distributed, as regards size, according to any particular plan. We may safely conclude that there was no special plan of distribution in the past. At one time, all the twenty-seven satellites which are at present in our solar system must have been independent planets or asteroids. Originally the inner reaches of the solar realm must have been densely filled with innumerable glowing planeticles and protoplanets. Orbital shrinkage (very great in the early ages of our solar system owing to the great density of the interplanetary medium then), capture, and union, caused those planeticles, most of which had soon become quenched, to form a crowd of smaller and larger planets. We have now no means of determining their number, but at the time when the Earth's crust had become cool enough to allow its first great waters, the primordial ocean or oceans, to collect and remain on it permanently, there may have been about half a dozen independent small planets between the orbits of our Earth and of Mars. As aeon after aeon passed, one after another of those small planets (ranging from about Ceres' size, 500 miles' diameter, to the Moon's size, 2160 miles' diameter) lost its independence and, after a period of satellitic bondage, became united with our Earth.

The last and biggest of those intramartian planets was Luna, our present Moon.

The capture of the planet Luna and its conversion into a satellite took place some thirteen to fifteen thousand years ago.

During the long period which followed the cataclysmic breakdown of the predecessor of our present companion, when the Earth was without a satellite, the independent planet Luna kept steadily coming nearer and nearer. Its orbital spirals were very much looser than our Earth's, for its resistance-feeling surface was quite out of proportion to

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its resistance-opposing mass ¹ Besides, from conjunction to conjunction the gravitational disturbances caused by the Earth, Luna's eighty-one times more powerful inner neighbour, became more and more considerable. At last, after many successful evasions on the part of Luna, or unsuccessful attempts at capture on the part of the Earth, the critical aphelion-perihelion conjunction occurred, and the petty baron became the vassal of our planet.

Outer planets travel less rapidly than inner ones. Unless the inner, quicker planet is very powerful, it cannot, even at rather close conjunctions, pull the slower, outer one out of its independent orbit, it can only disturb it more or less considerably. However, at its aphelion every planet moves most slowly, and at its perihelion most quickly. If now the inner planet is at its aphelion, and the outer one at its perihelion, it may happen that the outer, slower one at its quickest moves slightly faster than the inner, quicker one at its slowest (the more so the more eccentric their orbits are). This, then, is the most favourable time for capture.

When, some thirteen to fifteen thousand years ago, the planet Luna, at the aphelion-perihelion conjunction, moved outside the Earth at a distance of from 250,000 to 300,000 miles,² it came into, and travelled for a while in, the active gravitational realm of our planet. Then, when it would have raced the Earth at the point where its angular velocity was at its highest, while the Earth's was at its lowest, it could no longer extricate itself from the gravitational clutches of our planet. The invisible bonds were too strong to snap again, the resultant of the parallelogram of forces of its great perihelion momentum and the terrestrial pull flung it 'forward round' the Earth.

¹For comparison Earth Luna Surface 1 0 0742 Size 1 0 0202
Density 1 0 60736 Mass 1 0 0123 Shrinkage coefficient 1 5 841

²The present mean distance is about 239,000 miles

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The independent planet Luna had become the satellite of the planet Teria. It still kept its old orbit, but it was tied to its overlord's, intertwined, tendril-like, with it.

The Moon, therefore, is not the Earth's own child, but only an adopted small sister. It was not flung off by the Earth when the latter was still gaseous or magmatic and rotating with incredible velocity, and it has not screwed away from the Earth in a spiral orbit to its present distance, it was captured out of extraterrestrial planetary space at a cosmically very recent date, perhaps not much more than 13,500 years ago, and keeps steadily screwing closer. Though not the Earth's child it is yet of the same flesh and blood, that is to say, of the same magma and water. For it came into being with the Earth, and the other planets, and the Sun—its brothers and sisters.

Consequences of the Capture

The interception of a planet causes a number of catastrophic changes, both on the captive and on the captor

A cataclysm swept over the Earth

The gravitational powers of the new satellite played freely upon the planet. They were very strong because they were fitful and jerky, as the Moon approached very close at its perigees during the first 'months'

They wrenched the geoid out of shape and made the equator bulge out, more than it normally would for rotational reasons. This caused terrible earthquakes to shake the whole planet, it opened cracks in the Earth's surface, along which seismic activity is still remarkably great, the greater part of our present active, and recently extinct, volcanoes came into existence then, the Niagara and Victoria Falls, and others, were formed

They also drew part of the atmosphere away from the poles. This caused the sudden great climatic breakdown which is supposed to have begun some twelve to fourteen thousand years ago

But the most important influence of the lunar gravitation was upon the waters. They yielded very easily and fully to the satellite's pull, and streamed into the tropics. There they piled up a girdle-tide, a phenomenon which has not been recognized up till now

In the prelunar aeon the distribution of land and water was different. The ancient outline of seas and continents is only preserved between the latitudes of about thirty-five

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to forty degrees North and South. The farther north and south we go from these narrow girdles, the higher the sea-level was formerly, as we can gather from the still distinguishable ancient strand lines. The waters, withdrawn from the two vast calottes, suddenly surged, in a series of wild ring waves, into the tropics, and submerged extensive land areas there. It is true, we cannot follow up the ancient shore lines underneath the waves, but we can form an idea of the extent and situation of the pre-lunar land areas from various evidences. For instance, the 'Congo Fiord' allows us to guess at the original western margin of Africa, while the lumps of vitreous lava, fetched up by the dredge from the bottom of the mid Atlantic, prove that parts of what is now sea must once have been land.

When the planet Luna was captured, the realm of Atlantis met its sudden end, Lemuria disappeared, and the land of which Easter Island is the lone and enigmatic remainder was lost. The peoples that lived in the vast basin now occupied by the Mediterranean were wiped out. All over the Earth there was a great setback in the progress of culture and civilization, everywhere man retrogressed, often to the toolless stage.

On the new satellite the tremendous terrestrial pull wrought even greater havoc—though, of course, there was no life to destroy.

The Cosmic Ice Theory contends that the lunar core is covered with an ice-girt universal hydrosphere—by now probably frozen to the bottom—of a depth of about 140 miles. The calculation of this figure is based on the consideration that the density of the Moon, 3.3, is an average density, not caused by an excessive porosity of the lunar material, but rather by the fact that the lunar core, of an average density of about 5.5, like the Earth's, is encased in an ice-coat of the density 0.9. An 'ocean depth' of 140

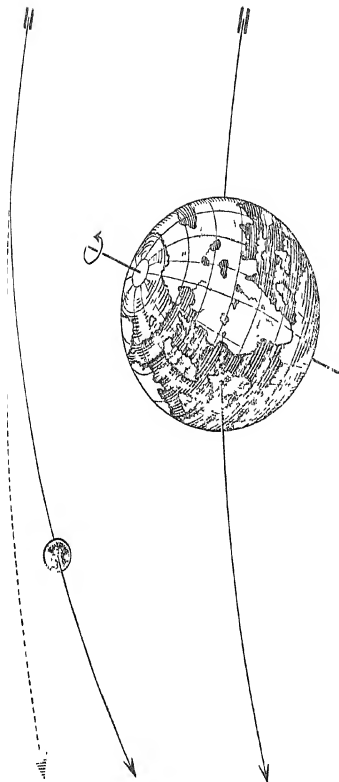


DIAGRAM 6

Capture of the planet Luna. At some time in the recent past, perhaps only 13,500 years ago, the small outer planet Luna came so close to the Earth that it fell into gravitational bondage. The diagram endeavours to illustrate the time immediately after the Earth-aphelion and Luna-perihelion conjunction which resulted in the capture. The planetary orbit of Luna has already been transformed into the satellite orbit of the Moon. The capture tide sweeps over the tropical districts of the Earth, the island continents of the Western Sea (Atlantis) are already encroached upon by the waters and will disappear within a very few hours; the same is happening in the Pacific and the Indian Ocean, where Lemuria and the island continents between New Zealand and Hawaii are being submerged. The Mediterranean is not yet formed; but the Straits of Gibraltar are already being unlocked and the Mediatic Sea begins to flow off west.

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miles may seem unbelievably great Yet it is by no means so tremendous it barely corresponds to the thickness of peel of a good-sized orange The water supply of our Earth, to continue the analogy, would not be more than the film we deposit when we breathe on that orange on a cold day

When Luna was captured it had not, as yet, its present surface features, but looked perhaps similar to Mars

At that time Luna still had the remnants of a rotation, perhaps amounting to fifty hours or so It rotated so slowly because for a very long time it had not received any new rotatory impulse through the approach and downrush of a satellite

Immediately after the capture, the powerful pull of the Earth broke the lunar ice-coat into a number of huge floes The great tidal influence caused the edges of the floes to become detrited, and in addition it squeezed up great quantities of water Exposed to the cold of space, the waters began to boil violently The satellite was densely wrapped in a cloud of ice-steam, which, owing to the weak lunar surface gravity, was carried away by the pressure of the Sun's light, giving a cometlike appearance to the young Moon

As soon as enough heat had been withdrawn from the water, the cracks froze over If it had not been for the rotation, and for the fact that the Moon moved in a much more eccentric orbit in its first age than it does now, approaching very close at its perigees and receding very far at its apogees, the ice-coat would soon have regained its rigidity But, as it was, every approach and withdrawal, combined with the rotation, caused streams of water to gush out from ill-congealed holes in the solidifying ice-coat The waters out of these geyserlike spirt-vents spread and formed shallow pools, being hot in comparison with the almost absolutely cold ice, the waters began to eat into the

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slabs, when they were withdrawn again after the tidal stress had changed, they left a shallow, saucerlike deepening with a slightly raised rim. Every new lunation caused these shallow saucers to widen and deepen. After thousands and thousands of lunations, the familiar lunar ring-pits were complete.

By the time the largest lunar 'craters' were formed, the Moon's orbit had become regulated to practically its present form, its rotation had already become somewhat slower, and the water supply below the rigid crystallosphere had been so far exhausted that the tidal stresses no longer forced up much water.

But the distortive influences always at work at last succeeded in smashing the ice-cover. At this the tidal activity and the pumping up of water became feebly active again. Then most of the smaller 'parasitic craters' were formed.

A final great breakdown in the ice-cover, after the rotation, and therefore the tidal activity, had become practically nil, brought about the formation of the enormous expanses of roughly round 'seas', and probably the white streaks of ice-dust which radiate from some craters, as, for instance, Copernicus, Aristarch, Tycho, Kepler.

Since that time the lunar world has remained practically undisturbed. Only the ice-coat kept growing in depth. At last it froze down to the bottom. The increase of volume caused the lunar surface to crack and to become reticulated with innumerable 'rilles', small quantities of water that had remained were forced up and formed the 'craterlets' which we see strung along the rilles, or pitting the 'oceans'.

Such, roughly told, was the genesis of the Moon's surface features, according to the deductions of the Cosmic Ice Theory.

The lunar ice, being almost absolutely cold, cannot

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show any physical or chemical reaction. Since there is no atmosphere on the Moon, the Sun's light is not transformed into heat. The light energy radiated on to the Moon does indeed raise the temperature of the lunar ice, but, ice being a good conductor of heat, this energy is swallowed and led into the interior. It radiates out again even before the shadow-line is reached, that is, as soon as the Sun is no longer at the zenith. Thus the lunar ice-coat constitutes a reservoir of cold which cannot be conquered during the short time that the Sun is at the zenith over each point. Even if the Sun were continually at the zenith over one point, it would take a very long time before the cold-reserve of the Moon was exhausted and the ice brought to sublimation.

When the planet Luna was captured it had a rotation of about fifty hours. During one revolution round the Earth, one month, it may have rotated about twelve times. At present its time of revolution and rotation are the same. This means that there is no rotation at all in relation to the Earth, so that we are only able to see one-half (or, because of the librations, about six-tenths) of the Moon. This decrease of the rotation to its lowest possible amount was brought about by the waters of the shoreless ocean obeying the terrestrial gravitation in a different way from that of the metallo-mineral core, they were, so to speak, held rigidly in one position by the Earth while the lunar core went on rotating underneath. The friction of the core surface on the 'terrestrial tide-hill bases', a kind of ring-brake, spent its rotatory momentum more and more so that it slowed down, until at last it stopped altogether. As the greater part of the water was gathered on the side turned towards the Earth and held there by the terrestrial gravitation, the lunar core became fixed eccentrically when the shoreless ocean at last froze down to the bottom. This phenomenon, and not any other 'inhomogeneous-

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ness' of the lunar material, explains why the lunar gravitational centre does not coincide with its geometrical centre, and why the Moon so easily librates

The capture of a planet does not end the orbital shrinkage which has made it a satellite. In the case of Luna, it must go on spiralling nearer to the Sun (from an extraterrestrial standpoint), or (terrestrially speaking) nearer to the Earth. At last the satellite will come so close that its cohesive powers will no more be able to withstand the pull of its gravitational master. It will disintegrate and come down on the planet's surface in a rain of ice, water, mud, and mineral and metallic blocks.

It is definitely recognized that our Moon deviates, steadily and unmistakably, from its 'theoretical' place in the heavens. It moves more quickly than it should, a fact which becomes especially evident during an eclipse. This secular acceleration is put down to a number of causes, the Cosmic Ice Theory, however, takes up an old idea of Newton's (one which he had to drop for want of evidence and encouragement), and gives it a new significance: the lunar acceleration is due to the influence of the interplanetary resisting medium (Cf p. 18).

At its present distance of little more than 60 Earth radii, the Moon causes the waters to rise many feet at high tide. On the zenith, that is, the side immediately below the Moon, this tide is due to the lunar attraction: the gravitationally caused 'tidal lift', on the diametrically opposite side, the nadir, centrifugal forces will cause the waters to rise, as the system Earth-Moon swings round a common centre which does not coincide with the Earth's axis, but lies, at the present distance of the Moon, three-quarters of the terrestrial radius away from it, that is, only about 1000 miles below the Earth's surface. Hence we say that the nadir tide is due to the rotationally caused 'centrifugal fling'. The nearer the Moon approaches, the

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more powerful its tidal lift and the centrifugal fling will become

At a distance of 30 Earth radii, the Moon will take only 232 hours or 9 67 days to revolve round the Earth, that is to say, the 'month' will have shrunk to this length. As, however, the increasing tidal influence of the Moon will cause the Earth to move more slowly, the 'day' will grow in length to, say, 24 5 hours at this period. So one month will really only be about 9 46 days long. If the present tidal lift, with the Moon at a distance of 60 Earth radii, is taken as 1 at the zenith (i.e. immediately under the Moon) and also as 1 at the nadir (through the centrifugal fling on the side of the Earth opposite to the Moon), then, with the Moon at a distance of 30 Earth radii, the tidal lift will have increased to 9 5 at the zenith and 9 4 at the nadir. The waters of the Earth will be drawn away from the polar districts and gathered in the tropics, the same refers to the atmosphere.

At a distance of 17 7 Earth radii, the 'month' will decrease to 96 hours or 4 days, 01, the 'day' having perhaps become 24 8 hours long, 3 87 days. The tidal lift at the zenith will increase to 42, the centrifugal fling at the nadir to 38.

At a distance of 8 Earth radii, the 'month' will measure only 29 7 hours or 1 24 days, or, the 'day' having perhaps become 25 hours long, 1 19 days. The tidal lift at the zenith will increase to 429, the centrifugal fling at the nadir to 383. As the Moon will now move in its orbit almost as quickly as the Earth rotates, the waters, which had previously still formed a kind of practically continuous girdle ocean round the Earth, will begin to separate into two distinct tide-hills. The higher latitudes will now be drained of all liquid water, as the atmosphere, too, will be drawn away from them they will be covered with a very threadbare air-coat only, and therefore be quite frost-bound.

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The ring-tide, owing to the tilt of the Moon's orbital plane against the equator, will not be parallel to the tropical circles of latitude, but will oscillate between the lunar tropics. When the waters of the ring-tide are at last gathered into two tide-hills, at the time when 'month' and 'day' coincide, these tide-hills will oscillate north and south, too, in obedience to the lunar pull.

At a distance of 7 1 Earth radii, the 'month' will be only 26 5 hours or 1 1 days, or, the 'day' having perhaps become 25 9 hours long, just slightly over one day. The tidal lift will be 755, the centrifugal fling 509. The oscillating tide-hills will become practically stationary longitudinally, only their latitudinal lapping will become more and more powerful, as there is little more forward movement.

At the distance of 7 Earth radii, the 'day' will have reached its greatest length, probably 26 hours, and the 'month' will have decreased to the same length, that is to say, the Moon will take just as long to revolve round the Earth as the Earth will take to rotate. The tidal lift will then be 788 at the zenith and 531 at the nadir. The Moon will be 'stationary' longitudinally over a certain part of the terrestrial surface. Africa being the most considerable tropical block of land, it may be the bollard to which the Moon will become 'anchored'.

At the time of the gudge-tide and the prestationary tide-hills the waters will wash all the loose material from the continents and scoop up the voluminous mud and ooze deposits which have been laid up during the preceding age. In addition, the waters will be charged with a great quantity of more or less pulpy vegetable matter, and tree-trunks and the carcasses of animals will float on them. Huge helpings of this turbid soup will be thrown into the frostbound northern and southern cbb-districts by direct or reverberated waves. The farthest outrunners of these waves will freeze before they can cbb back. So layers of mud and

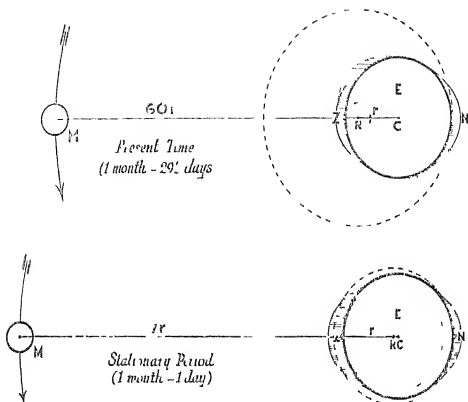


DIAGRAM 7

Moon-caused tides E, Earth, M, Moon, C, centre of Earth, Z, zenith point (directly under Moon), N, nadir point (directly opposite), R, rotational centre of system E M, Z-C, Earth's radius ($=r$), R-C, eccentricity of system E M (This eccentricity depends on the distance of the Moon. As the masses are roughly 80 : 1, the eccentricity is at 60 r, as at present, $60 : 80 = 0.75$ r, at 7 r, as at the Stationary Period, $7 : 80 = 0.0875$ r, at 1.8 r, as at the time of disintegration, $1.8 : 80 = 0.0225$ r). The tides are produced on the side immediately under the Moon, by the satellite's gravitational pull, on the opposite side, by the centrifugal forces engendered by the rotation of the system Earth-Moon, the tidal fling. At a distance of 60 r the lunar pull is scarcely augmented on the zenith side by the rotation of the zenith point round R, at the Stationary Period it receives a substantial increase owing to the considerable swing. The tides always lag behind the Moon to a certain extent, because of the inertia of the waters. ---, path of the zenith during one month, ---, path of the nadir during one month.

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other mineral material and layers of plants and plant-pulp will be built up, separated by layers of ice. Animals will become embedded in the same way. Each wave that is able to reach the cbb-districts will build up another layer. At last the pressure of the overlying strata will melt the ice of the lower layers. The water will find its way out while the mud and pulp strata, now touching, harden under the great and growing pressure and the heat. A glacierlike, slow, sliding movement, partly, perhaps, owing to some tilt of the underlying floor, partly owing to an uneven distribution of the strata, and mostly owing to the powerful pull of the close Moon, will in certain districts fold, plect, flex, distort the originally everywhere practically even strata into fantastic forms. Thus stratified rocks are built, coal-deposits are formed, hecatombs of carcasses are laid up for oil production, fossils are embedded. Only in the mountain-building ages, during, and shortly before and after, the one-day 'month', are fossils lastingly preserved, helped by the process of freezing which excludes the air and prevents putrefaction. In the ages before the 'stationary period', and in the long ages when there is no satellite, no fossils are lastingly embedded. Hence the puzzling 'missing links' (long successions of links, indeed!), hence the utterly inexplicable lacunae in the otherwise so faithful records of the rocks.

Strictly speaking, of course, the phase of the one-day 'month' should only be a very short one. It will be much longer than one might expect, for the following reasons. Before the 'stationary period' the Moon had slowed up the Earth's rotation, as its revolution was longer than one day. When 'day' and 'month' become equal in length, no stability is attained. Cosmic causes urge the Moon to go on shortening its time of revolution unremittingly, and the ties between the two cosmic bodies, the anchor-chains securing the Moon to Africa, are so strong that the satellite cannot break

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loose. Therefore it will take the Earth along with it and thus speed up our planet's rotation. Only when the Earth's huge mass becomes too inert for the ever quickening pace of the Moon, will the gravitational anchor-chains snap and the companion leave its bollard. The tide-hills will follow the Moon, too, and move on again longitudinally, this time from west to east.

When the Moon is at a distance of 6 Earth radii, the 'month' will decrease to 20.5 hours and the 'day' will decrease to perhaps 25 hours. The tide-hills will eventually become unable to follow the ever accelerating pace of the Moon, and will begin to flow together in a high and narrow ring-tide. The tidal lift will amount to 1132, the centrifugal fling to 838.

At a distance of 2.8 Earth radii, three 'months' of about 6.5 hours each will be equal to one 'day', which has been speeded up to the length of about 19 of our present hours, by the constant acceleration that the Earth will experience through the tremendous pull of the close satellite, whose tidal lift will then amount to 11,140, while the other side will experience a centrifugal fling of 8250. The nearer the Moon comes, the more stable everything will get, for the shrinkage-speed of the doomed satellite will become smaller as it moves more quickly, and therefore more powerfully, through the interplanetary medium. The girdle-tide will surge over the Earth and destroy everything that has not been firmly built—and much that has!—in the great mountain-building epoch. This will be the time of denudation and abrasion, the Abluvial Period, in which the Earth will, more or less, be given the general shape it is to have in the succeeding age.

At a distance of 1.8 Earth radii, the 'month' will have diminished to 3.4 hours, and the 'day' will have reached its shortest duration, probably 18 hours. The Moon will then speed round the Earth more than five times per

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'day' The satellite's tidal lift will reach the tremendous figure of 134,560, while the centrifugal fling will amount to 20,480. This will not only draw the waters of the Earth into a very narrow and high girdle-tide, but will also distort the Earth into a definite lentoid shape. The whole lithosphere will continually heave under the gigantic lunar pull, in an endless succession of earthquakes. All these phenomena will increase—till the cohesive powers of the Moon will no longer be able to counteract the enormous terrestrial gravitation which, of course, will have grown proportionally. The satellite, which had long taken an ovoid shape and had been riven and kneaded, at last will begin to dissolve at both apices.

First the ice-coat of the satellite will come off in blocks, which will leave its surface in two tail-like streams. Spiralling steeply down to the Earth, they will soon shoot tangentially into the atmosphere, and cause terrible hail, rain, and hurricane catastrophes. The floor deposits of the lunar ocean will come next, causing reddish or brownish mud-rains. Then layer after layer of the lunar core will come off and descend on the Earth in continuous stone and ore rains. Finally the metallic centre of the lunar core will burst into huge fragments, ore mountains, which will fall upon the Earth in flames.

The Moon being no more, its sway is gone, too. Whatever was held captive by its enormous powers will be liberated. The girdle-tide will stream off north and south in tremendous ring-waves, which will overleap every obstacle, and oscillate between the tropics and the poles many times. The lithosphere of the Earth will return from the lentoid shape to the geoidal, practically spherical form. Earthquakes of unexampled violence, intensive volcanic action, faulting, rupturing, tilting of huge slabs of the Earth's surface will come in the train of this transformation.

Consequences of the Capture

Even though the Moon is no more, its shadows will still hang over the Earth. It will take a long time for the outer ice-block 1111g to come down, for the seas to come to rest, for the air to become sweet again and the water limpid, for the seismic and volcanic activity to subside to its minimum. Keen mountain ridges, sharp jags, lava cones and flows will dominate the landscape. The north and south will still be heavily glaciated.

The majority of living beings will have been destroyed. The Earth will have become a void wilderness. But the spirit of life will soon move again upon the face of land and sea.

The Ice Age will be over. What remains of it will break down fast as the atmosphere spreads evenly over the Earth. The lunar ocean-floor deposits, the loess, will fertilize the Earth. And the planet will teem with luxuriant vegetation and animal life once again.

Other Satellites

Tremendous forces tremendously working—cosmic actors striding the terrestrial stage—such is the drama of the Earth and its Moon. And its *moons*, rather, for the Cosmic Ice Theory contends that since the first appearance of great waters on our Earth, bequeathed by unknown primordial satellites, at least six satellites have become united with it, each one of them building up a distinct series of strata, the geological profiles. These are, from the uppermost to the lowest, the formations of

- 1 The Cainozoic Age (Pleistocene and Tertiary Rocks),
- 2 the Mesozoic Age (Cretaceous, Jurassic, Triassic Rocks),
- 3 the Permian and Carboniferous Ages,
- 4 the Devonian and Silurian Ages,
- 5 the Cambrian Age,
- 6 the Algonkian or Archaeozoic Age.

Other Satellites

Below this last profile the formations can no longer be distinctly separated, for want of fossils, or, in the light of the Cosmic Ice Theory, for want of a sufficient quantity of water

The above paragraphs, referring to things that will be, to the eventual cataclysm of Luna in the distant future, might just as well have been written in the past tense, because the phenomena of the breakdowns of the pre-lunar satellites were essentially the same. The ratio figures given remain practically unchanged—only the initial values were, of course, different. The time of the terrestrial rotation must be conceived to have been slower before the Tertiary satellite urged it on to its present length.

The Cosmic Ice Theory contends that the Earth's satellites were smaller the farther back we go, because the smaller extraterrestrial planets, shrinking more rapidly towards the Sun, came into satellitic bondage sooner. Moreover, if we compare the thicknesses of the geological profiles, we find that they steadily increase from the Algonkian to the Cretaceous Ages. The Tertiary deposits are especially mighty, for the predecessor of Luna was a powerful satellite. We cannot of course say what its dimensions were, but, to have a basis for calculations, Cosmic Ice theorists have attributed to it about half the mass of Luna, and a diameter about four-fifths that of our present satellite, that is, about 1750 miles.

The Role of Man

And man? Where does man come in?

Mankind has been an intelligent audience, watching the development of the cosmic drama, its rising to a climax, and the solution of its crisis, from safe seats on the mountain heights and other places of refuge.

Consequences of the Capture

And 'diluvial' man has perpetuated his tremendous experiences for us, his descendants. And these reports of eyewitnesses are the great Myths of Deluge and Dragon-Fight, of Earth-End and Earth-Creation, of Gods and Heroes.

How old man is we cannot even faintly guess. One thing, however, is a biologically certain fact: he is by no means of recent extraction, but of extremely ancient lineage. The cataclysm of the Tertiary Age, that is, of the breakdown of the predecessor of our present satellite, may have taken place some ten thousand generations ago. And man was fully man even then! We must look for the rise of man at a much, much earlier time than we have been taught to do by geology. Though in culture and civilization not much more than a troglodyte at the times of stress created by the close approach and breakdown of a satellite, man was, from his earliest beginnings, too clever to allow himself to be trapped, in any considerable numbers, at the only time when fossils could be lastingly embedded: the 'stationary period' of a doomed satellite and the ages immediately preceding and succeeding it. Living at a safe distance from the shores of the active, oscillating tide-hills, the families or hordes or tribes were quite safe.

Man's descent is shrouded in mystery: it is an unbroken succession of missing links! The central stem of the Primates went on growing, aeon after aeon, but parts of the lateral branches were lopped off on some half a dozen occasions in the Earth's history, and only these reveal to us their earlier forms.

To discover something about man, we must not go to the geologist, who can only show us a couple of jaws and an empty brainpan or two, *reliquiae* of unlucky wretches who perished in the last stages of the cataclysm, the Great Flood or Deluge, or at the time when Luna became the companion of our Earth.

The Role of Man

We must rather ask the biologist about man's extremely delicate and complicated body, with its atavisms and bud-organs, we must ask the psychologist about the strange working of his mind, his dreams, his fears, his hopes, and we must go to the *mythologist*, the quiet collector of 'cosmic fiction', who has not been taken seriously up till now, for the true meaning of the reports that have been handed down to us from time immemorial

The Meaning of the Myths

Though many attempts have been made, it has not, up till now, been possible to base a cosmological system upon the myths of Earth building or Earth destruction that have come down to us. No firm footing could be found in the quicksands of tradition, and only fanciful deductions could be made. How could it be otherwise? For the explanation of the content of mythology was attempted, either with the aid of philology—queen of humane sciences though she is, she was singularly unfitted to the task and contributed little more than an etymological survey of the ground—or with the aid of psychology—equally out of place as a real key—instead of with the aid of astrophysics. Neither was it possible to relate the myths with a cosmological system, for there was no theory whose deductions would have agreed even remotely with the story the myths told of the beginning and end of things.

It is the Cosmic Ice Theory which has provided the natural and scientific basis for the interpretation of the content of mythology. The astonished mythologist now finds the cosmic myths to be faithful reports of actual events which happened, literally, 'at the beginning of things'.

He is told that the myths are the faithful reports of eye-witnesses—descriptions of the tremendous happenings in an age when the cosmic powers ruled supreme, of times of terror, periods when vast geological influences were at work fashioning the face of the Earth.

The Meaning of the Myths

If this is true, it can only mean that these tales have been handed down to us from an unbelievably distant date, through a spell of time that is truly 'geological'. Man's mind has long been regarded as marvellous, but so great a feat as the handing down of a tradition of the end of an old state of things and the beginning of a new age has never yet been attributed to the human intellect. Nevertheless, helped, perhaps, by ideographic devices, the myths have come down untold centuries—many thousands of centuries, perhaps, in certain instances. The static character of early historical, and therefore also prehistoric, culture will have been very instrumental in this. It is the introduction of artificial memories, of books, that has given us a wrong idea of the storing and recording power of the human brain, it is the use of writing that has destroyed much of this most primitive and important capacity of man.

Such views will also necessitate a new definition of the term 'myth'.

What is a 'myth'?

According to the usual definition, myths attempt to give an interpretation of the forces active behind the most imposing phenomena of nature. They seek to explain the origin of things, of the gods, of man. They are intended to inspire awe and reverence, and to teach spiritual or religious truths which would remain unutterable and incomprehensible were they not expressed in half-material form. Legends alone are admitted to start from the plane of historical fact, fables and allegories are productions of later date, and are regarded as belonging wholly to the realm of fancy and as being entirely the outcome of popular reasoning, and myths, although it is recognized that they are undoubtedly the oldest productions of the human mind, are usually considered as little better founded.

In the light of the Cosmic Ice Theory we are forced to

The Meaning of the Myths

reconsider the definition of the term 'myth' We have to reinterpret the myths, or at least those which are described as 'cosmic' Up till now the term 'cosmic myths' has been used with no thought that they were reports of real events in the distant past, dramas of mankind with a vast cosmic-telluric background But, if we accept the deductions of the new theory, we must recognize that these myths are by no means the wild conjectures of an ignorant age, about the 'beginning of things', rather we must regard them as the finished, though much worn, much overgrown, outcome of close observation Myths are not immensely exaggerated tales of local happenings, but matter-of-fact reports of universal events—which have been rounded off, interpreted, and idealized in the course of time The realm of mythology, therefore, is not a fable-land Myths are primeval lore, holy lore, the 'science' of unknown, unsuspected forefathers living in the dark days far beyond our earliest history Myths, to stress it once more, have a real, material background and describe antehistorical happenings of which only geology has up till now been able to give some account The tendency of this book, therefore, is quasi-Euhemeristic, or, rather, neo-Euhemeristic Myths are history in disguise

It may be objected, and quite reasonably, that we overvalue the tenacity of the old myths Human memory is short, as far as the ordinary events of history are concerned The subjects of the myths, however, are events of such vast dimensions, often of such long duration, and always of so elementary a character, that they have become inerisibly graven into man's brain Thus we may rightly say that mythology is a window, and almost the only window, through which we may look out upon the world of our remotest ancestors The myths constitute in most cases a bridge consisting of one last slender, much-decayed plank which still spans the dark gulf separating us

The Meaning of the Myths

from the most ancient times, but this plank still allows a man to step delicately over it and to take with him, as it were, a telegraph wire which soon carries back incredible news.

Myths have a strange power and appeal. It is hard to forget mythological things. Is it because they touch an unknown string in our soul, which becomes responsively vibrant? The tenacity of so-called 'superstitions' is an interesting parallel. We know that besides our very defective active memory we have a very lively passive memory, which is retentive of more impressions than we usually think to have obtained. It is also hardly a matter of doubt, nowadays, that something which may be called a race-memory exists. Is there also, perhaps, a much longer species-memory? The disasters and phenomena of the pre-stationary, stationary, post-stationary, and breakdown periods, which lasted for many thousands of generations, must have impressed themselves not only on man's body but also on his soul. And, if man's soul is imperishable, how can that which is part of it be lost?

It is believed that the race- or species-memory is able to reproduce scenes of the lost ages in dreams. Jack London's book *Before Adam* tries to put this forcibly before us. It is true that this story is only fiction, but, even so, it can be regarded as possible.

If the writer of the present book may be allowed to do so, he will recount an oft repeated and extremely plastic and vivid dream of his own which may be indicative of cosmic memories—or, of course, it may be just a fantastic pattern, such as our brain, unhampered by reasoning, weaves during sleep.

When a boy I often dreamt vividly of a large moon, somewhat bigger than a broad-board held at arm's length, glaringly bright, and so near that I believed I could almost touch its surface. It moved quickly through the heavens. Suddenly it would change its aspect and—almost

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explosively—burst into fragments, which, however, did not fall down immediately. Then the ground beneath me would begin to roll and pitch, helpless terror would fall upon me—and I would awake with the sick feeling which one has after a terrible nightmare.

That was a long time before I began to read astronomical books or took my first peep at old Luna through a telescope. But I think I remember that I was not surprised at the peculiar lunar surface features at all. They seemed familiar from my having observed them on my own moon. Later I became deeply interested in mythology, it became quite a passion with me to read destruction and creation myths. But I never connected my repeated dream with any of the phenomena I found described in them.

In 1921 I became acquainted with the Cosmic Ice Theory. To my intense surprise I found descriptions very similar to my dream in the pages of Hoerbiger's work. Since that time I have often tried to coax my subconscious mind to give me another performance of my cosmic dream, but in vain. My violent endeavours must have shocked that cell which had reproduced this memory of a dead age. Or, perhaps, the finding of a thoroughly satisfactory solution to that dream-picture had made its further repetition unnecessary.

To return to the question under discussion. If myths are the reports of cosmic events, they tell their tale in a curious, veiled, roundabout way, if they represent the science of our early ancestors, they are obviously unscientific. Nevertheless our statement stands. The exact scientist is essentially a product of the last 250 years. The scientist or sage of the Middle Ages, of Antiquity, and of the vast ages of Pre-History, was pre-eminently an artist, a poet, a seer. He did not name the powers at work around him, he only observed them and likened them to familiar things. But he knew what he saw, he grasped its essence, and this

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knowledge was his science, this 'wisdom' gave him a feeling of power

What is the difference between a scientist and a seer?

The scientist (literally the separator, the analyst) is objective, he is a collector of facts which he endeavours to describe as they are in themselves, he is, generally, not influenced by any feelings of partiality, of love or repugnance, of admiration or awe. The scientist plumbs all things with his intellect and strives to express the result of his investigations in an abstract statement or a formula.

The poet (literally the maker, the synthesist) is subjective, he is a painter of pictures, trying to describe not the things in themselves but the impression they make upon him, he sees, or rather feels, things through his creative imagination suffused with emotion, he endeavours to give his vision in pictures which allow a great latitude of interpretation.

Though a world of difference separates them, both are right and both are necessary. If they set out to describe the same facts it is only their words and their methods that differ, not their meanings. It is not difficult to translate the work of the one into the version of the other: the poet's vision into the scientist's report, or vice versa. But the poet's work is more lasting, for his pictures easily take hold of the imagination, and so survive.

Well-known examples of this, though very silly ones, are the various 'poetical' helps to Latin and Greek grammar. Our unsteady French and German is chiefly due to the absence of such doggerel aids to memory. Not is it only schoolboys who take refuge in 'poetry' to remember facts: from his one-time abortive study of medicine the writer is still able to name the carpal and tarsal and cranial bones, and the facial and other muscles, helped by the ridiculous rhymes and stories which the tutors handed on to the students.

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It is a fact known to everybody that electric current, such as household and industry are able to make use of, cannot economically be transmitted in the form in which it is generated. Low-tension current would soon be practically destroyed through loss of energy caused by the resistance in the line. Therefore it is transformed, put into export shape, and the resulting high-tension current can be sent for considerable distances in overland lines without heavy losses.

This technical phenomenon may perhaps help us to explain the peculiar diction of the myths. Transformed into a serviceable 'transmission form', at a time when the original facts were becoming distorted and incomprehensible without an enormous amount of commentary, the myths have brought the reports of the distant past across the ages down to our time.

The conception of the myths as 'high-tension' poetical interpretations of actual observations, and of their form as an 'export' shape, is helped, perhaps, by the German word for poetry, *Dichtung*, literally 'that which has been condensed, tightened, or packed into the smallest possible space'.

Of course, if the supply lines are too long or too inefficient, even high-tension current is weakened. Therefore many myths, having been transmitted across unimaginable spells of time, are so faded that we must use relays to strengthen their symbols for translation into more scientific language.

The reasoning apparatus of the Cosmic Ice Theory provides such a relay and transformer.

Mythology, helped by this new astrophysical theory, may develop into a new science of prelunar culture and prelunar knowledge. The theory will allow us to grope our way far back into the dim prehistoric world. With its aid we shall be able to ascertain the original forms or skeletons

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of many myths, and free them from the rank overgrowth of later date. For, as time went on and a literary tradition began to grow, and as parallel versions of myths preserved by other sections of each tribe or nation became known, the need of a central tribal or national myth arose and was met by the priestly sages. They 'edited' the material that was before them, grafting one myth upon another, and pronouncing the result the official lore, this they took into their charge, and all the remaining parallel stories became the stock of the unofficial oral tradition of each tribe. Therefore many, if not all, myths are composite products, mixed with matter which was originally parallel or even foreign. As time went on and historical deeds began to overshadow the ancient traditions, many of their terms were no longer regarded as literal descriptions, but as allegorical interpretations. A process of splitting up, of specializing, of idealizing, started, now that all definite knowledge of the original events had died out. Confusions arose out of misunderstood terms which survived after their original significance had been lost. With this another important process took place, and soon most of the old stories were overrun with metaphorical matter and drowned in symbolism. Finally their architecture became almost totally obscured. They had taken the form which is familiar to us and which causes us so much perplexity.

The religious beliefs of a people are primarily based upon its myths. But, while the original makers of the myths painted from nature, the late compilers of the religious systems were only copyists. The cleavage between religion and mythology became more definite as the priests developed their own views. With all their attempts to idealize and sublimate their robust material, however, the priests could not completely hide its provenience. The colour of the original lore keeps shining through their threadbare superstitions.

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There is no people known without at least some sort of a religious system. From this it has been argued that some sort of revelation from a Supreme Being must have been granted even to the most primitive races. Although it may be flat heresy to gainsay this view, yet we can hardly help doing so. No religion is original. There is none that has not been built by crafty superstition upon the ruins of an ancient mythological system. And there is none that has gained by this separation of fact and faith—with the sole exception, perhaps, of Judaism in its later, or 'Christian', developments. Out of the towering piles of the grand sagas of old, the priests quarried the building material of their creeds. Frequently they took over a course of masonry unbroken, and they often used a block without effacing its curious sculpture, the skilled eye of the mythologist easily discerns the old material, extracts it, and supplies the missing parts. The religions generally may also be likened to a bone bed, an unrecognizable mass of osseous detritus, in which a single better preserved tooth or vertebra is sufficient to tell us all about its age and provenience and to point us to the original myth. Religion is fossil mythology, mythology is fossil history, and this disguised history takes us into ages so remote that they border upon, and partly indeed coincide with, the ages of geology.

Armed with such considerations, we could make an interesting attempt to interpret the pictography of the religious systems. We are now able to grope our way back to the times before the gods became ethical powers and abstractions, but were, one group of them at any rate, men living amongst men, and walking in their midst. A reinterpretation of the myths of the world has long been felt to be necessary, but no clear lead has ever been given. Though the trend of thought contained in this book may eventually be proved to have been wrong, we nevertheless

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offer it to science in special, and the reading and reasoning world in general, as a guide to the dim ages beyond our historical vision. We know that the conclusions we draw are bold, but it will be admitted that none of them is forced. And we also know that, though our approach to the treasures of Pre-History is novel and unfamiliar, our readers will be unable to extricate themselves from the grip which the stories, or the explanations, exercise upon their imagination. Even the specialized mythologist, we believe, will acknowledge the new basis of work which is offered to him in these pages, and will use this first real opportunity in the history of his science to attempt the reinterpretation of his subject-matter.

This book is only interested in that class of myths which is generally described as 'cosmic'. This class comprises all the deluge and other destruction myths, the accounts of the creation of the Universe, the Earth, the Gods, and Man, the descriptions of lost lands and forgotten arts, the tales of dragons and other monsters. This class of myths is a natural, not an artificial, one. The cosmic myths are, indeed, the only myths which may be properly called master tales, or key stories. They are reports, and all the others are the product of fancy merely.

It is a significant fact that there are no specifically national cosmic myths. While many other tales are the unique property of one people or another, the cosmic myths—the creation stories and, above all, the deluge reports—are apparently only local renderings of a world-wide theme. We find that many races, related or unrelated, have the same ideas, use the same pictures. This cannot be chance, this cannot be invention, and we are forced to approach the complex of cosmic myths from quite other angles than have been tried hitherto.

The most universal of all myths is probably the deluge

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myth There is no people known without at least one. Sometimes even small tribes have several versions. And what is most puzzling is that many deluge myths are strikingly similar, or even quite parallel, in minute details, though the tellers are, in race and language, entirely unrelated.

This has caused one school of mythologists to suppose that these myths have spread from a single centre and were handed on by the missionary activity of some pre-historic colonial empire, much as the dissemination of the Jewish-Christian mythology has influenced 'savage' thinking in our own days. That there were vast colonial powers existing beyond the ken of history we have no reason to doubt, but that they were the authors and disseminators of the deluge myths we have no reason to believe. We can perceive, from many details, that the myths of the respective nations must be original.

Another school of mythologists have supposed that the Great Flood was an actual occurrence, indeed, but of local extent and of diminutive dimensions only, some inundation which became exaggerated to a gigantic, heroic scale, as the original disaster receded into the past. Although the contrary process of foreshortening might be expected, this explanation is much more convincing. Dangers, indeed, usually do grow immensely in boastful tales, and a mouse may eventually be changed into an elephant. The plurality of the versions of the deluge myth is also taken as evidence of the local extent and the repeated, seasonal recurrence of the floods. Nevertheless this view is unsatisfactory, too.

The events described must have been truly overwhelming cataclysms, not inundations caused merely by prolonged rain (although this is a regular feature of one type of deluge myth) which set the low-lying parts of some country under water, or by earthquakes (another striking

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trait of many deluge myths) which caused huge waves to sweep over some island or surge far inland on some seacoast. They must have been tremendous, universal, and rather sudden convulsions, to impress themselves so deeply upon man's mind and memory.

Indeed, these events must have been the breakdowns of the satellites which the Cosmic Ice Theory, for the first time, introduces into cosmological and mythological thought.

We shall take up this thread again on a later page.

The Lost Archives of the World

Our knowledge of what was in the world before us is based on books, it rests on the diligence and wisdom laid up in archives. Treasures they are that the moth cannot eat and the rust cannot corrupt. But the tooth of time is at work, and the papyrus moulders, the baked tablet returns to its native clay, the stone is riven and shattered.

What ravages time has wrought! And yet its hand is kind, compared with the rude violence of man.

Alas, alas, the libraries that held the wisdom of our forefathers—their bright clear streams no longer fertilize the dreary waste and desert of our days. The living sources are choked, the voices are silent, the light has faded. The sands of oblivion cover the early times.

Sargon's 'City of Books', the imposing library at Uruk, the royal storehouse of the wisdom of Sumer and Akkad, is little more than a name, its fragments are few, and hardly decipherable.

The greatest patron of literature among the Assyrians, Ashurbanipal, amassed an immense library in his palace at Nimveh. It is gone—like the archives of the Sumerian patesis at Lagash and those of the Babylonian princes at Nippur, as well as the collections of the Medians at Ecbatana, of the Persians at Susa, and of the Minoans at Knossos.

In Egypt nothing remains of the libraries of the early kings, of Khufu and of Khafra, the great pyramid builders, nothing but their fame, of the enormous library of the

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7th Dynasty at Memphis hardly anything has come down to us, Akhenaten's archives are lost; the 'Dispensary of the Soul', the vast storehouse of Egyptian lore and learning at Thebes, the greatest achievement of 'Ozymandias, King of Kings', Rameses III, is no more. Again and again the rulers of the ancient land of mystery rallied all powers to make good the losses and to restock the libraries. The Ptolemies sent into the four corners of the world to secure the cream of all written literature, they caused all books brought to Egypt by foreigners to be confiscated for the benefit of their libraries. A treasure of over 40,000 rolls lay in the Serapeum, while the collection in the Bruchcum was little short of half a million. Some ancient authorities would augment the figure of the books at Alexandria to 700,000, almost every one of them an original.

Of this latest and greatest of Egyptian book collections not one copy remains! When Caesar put the fleet in the harbour of Alexandria on fire in 47 B.C. the flames 'accidentally' spread to the Bruchcum and gutted the royal library. To stay the grief of inconsolable Cleopatra, and to make up for the heavy loss to Alexandrian learning, Antony caused the Acropolis of Pergamum to be cleared of its book-treasures and presented the Egyptian queen with a collection of some 200,000 parchment scrolls, each unique. But the Alexandrian library continued to be ill-fated. Diocletian burnt a collection of ancient esoteric works of the Egyptian priests. Auranian destroyed the restored and newly flourishing Bruchcum in A.D. 273, and most of its books perished. In the reign of Theodosius, Christian mobs pillaged the Serapeum. At the conquest of Alexandria by the Saracens, whatever had escaped destruction before was carefully destroyed to make room for the all-sufficing literature of the Koran.

Practically nothing remains of the most ancient part of Greek and Roman literature. Lists of names and titles, a

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trickle of quotations, a number of extracts this is all that has come down to us. Lost are the Sibylline books, full of curious lore, which King Tarquin the Proud bought from the Erythraean (or Cumaean) prophetess, and which perished in the great fire of Rome in 83 B.C. Many early works perished when Leo the Isaurian, Emperor of the East, caused some 300,000 classical manuscripts to be burnt. Phocas destroyed the Syrian archives. The earliest annals of the Greeks, the Romans, and the Etruscans are irretrievably lost.

Caesar destroyed the ancient sacred library, of fabulous extent, of the Celtic Druids, kept in the hill-fortress of Alesia. Alexander the Great, when devastating the Iran, burnt the original of the Avesta, written in the Old Persian tongue with golden letters on 12,000 cowhides, or consisting of 21 volumes of 200 leaves, each containing 100,000 verses.

A Chinese emperor, about 220 B.C., ordered all books extant in his time to be burnt and all scholars acquainted with their contents to be buried alive.

Nor did this senseless destruction of irrecoverable treasures cease in more modern times. At a time when the learned men of Europe complained bitterly of the lost works of classical literature, a new world was opened up, a world with a great and splendid history whose records were carefully kept in vast libraries: the royal archives, above all, of Mexico and Peru. But then barbarism, religious fanaticism, and European megalomania contrived orgies that defy description.

Don Juan de Zumarraga, the first archbishop of Mexico, caused ten-thousands of pictographic manuscripts which had been treasured in the strong-rooms of temples and palaces to be burnt. In his eyes they were magic scrolls full of pestilent superstition, which must be extirpated. Montezuma's pueblo was gutted. From every quarter of the

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Mexican empire the manuscripts were zealously gathered by soldiers, the great depository of the national archives at Tezcuco was cleared, a great 'mountain-heap of devilish books' was piled up in the chief square of Tlatelolco, and fire was set to it—*ad maiorem dei gloriam* Zumarraga's fanatical colleague, the Bishop of Merida, made a similar *auto-da-fé* of an enormous number of Mayan manuscripts 'Never,' says Prescott, 'never did fanaticism achieve a more signal triumph than the annihilation of so many curious monuments of human ingenuity and learning'

Why should we complain about the lost libraries, why lament the books destroyed by time or the impious hand of man? It is not from the literary standpoint that we deplore the irrecoverable loss of the work of the sages of old, we lament the many scrolls, the many tablets, the many codices, for their ancient curious lore—treasured through aeons in man's memory, guarded through ages as a sacred tradition, and kept as holy literature when the diligent scribe had once committed it in sacred signs to his material with brush or style Many of these books undoubtedly told of the time when the world was created, of the time when the great waters washed the sinful Earth clean again and when fire purged it, of man's rise, of the time when the gods still lived among men, of the time when the Earth was still young, of a luxuriant paradise, of a Golden Age

Of all this little has remained, only fragmentary proofs of a great literature of its kind—a few clay tablets, some shreds of papyrus, telling the mythologist with scanty words of sources lost, dried up, never to well forth again.

The Tertiary Satellite immediately before its Cataclysmic Breakdown

We shall now enter upon our task of examining the cosmic myths in the light of the teachings of the Cosmic Ice Theory regarding the universal cataclysms caused by satellites which have shrunk so close to the Earth that they are doomed to disintegration

The chapters will be found to follow one another more or less in the order of events required by the Cosmic Ice Theory and reported in the myths of many parts of the world. The succession of events is not only the result of the logic of our theory, it is also the order insisted on by many of the myths, it is the natural development of things

In the post-stationary age the Tertiary satellite moved in its orbit more rapidly than the Earth rotated. The month became shorter than the day. The satellite, consequently, rose out of the west at this time.

Our present Moon really does the same, but as the terrestrial rotation is very much quicker than the lunar revolution it seems to rise out of the east and set in the west. However, if we observe its course in the heavens for a night or two, we become convinced of the west-east trend of the Moon's movement.

At first, just after having broken loose from its anchorage, the Tertiary satellite moved eastward very slowly, but later, when it began to overtake the Earth more and more, its apparent movement became more and more rapid. At

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the time immediately before the breakdown this must have been an extremely impressive sight

We must remember that at this time the Tertiary satellite had an apparent diameter of probably more than forty degrees, that is to say, it was as big as a soup-plate held at arm's length. But our eye sometimes makes things appear bigger than they are. The harvest moon just rising over the horizon is often described as having the size of a cartwheel, although we could eclipse it with a small pea held at arm's length. And so the brilliantly lit disk of the close Tertiary satellite must have appeared to the Antediluvians truly gigantic, 'covering all heaven'

The Aztecs regarded the west as the chief cardinal point. We regard the east as the most important direction, chiefly because the Sun rises there. The sunset cannot have been the reason for their 'occidentation'. The Tertiary satellite was an overpowering sight. Even after its end, the west was retained as the chief point of the compass. This view is supported by another Aztec statement, namely, that formerly the Moon set in the direction of the Black-Red Land. The latter was also called the Dawn Land, and certainly stood for the lost island-continent of Atlantis.

The Chinese say that it is only since the new order of things has come about that the stars move from east to west. After the breakdown of the Tertiary satellite the shooting-star streams had rushed over the heavens from west to east. It should also be noted that the signs of the Chinese zodiac have the strange peculiarity of proceeding in a retrograde direction, that is, against the course of the Sun.

In one of the myths of the Jews we read 'In those days the Lord caused the Sun to rise in the west and to set in the east'. This is physically impossible. If, however, we substitute 'Tertiary satellite' for 'Sun' (Sun and Moon often exchange places in myths), the passage immediately gains

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deep meaning That celestial body was an overwhelming and exceedingly bright phenomenon, much more impressive than the Sun

In the mythological matter preserved in the Book of Daniel we find the following passage (viii 5) 'An he goat [used metaphorically for the Tertiary satellite] came from the west on the face of the whole Earth, and touched not the ground and the goat had a notable horn between his eyes' (a description of a phase and of the surface of the satellite)

The exalted Vedic deity Varuna, the 'Thousand-Eyed', the 'All-Enveloper', or 'Encompasser', is revered as the 'Regent of the West' The Cyclopes, according to Homer, 'lived' in the far west, as did also the Gorgons, the Graeae, and Cerberus, and these, as we shall see in later pages, are personifications of the huge Tertiary satellite

The west as the point whence all evil came is still faithfully preserved in many myths So Apepi, the great Egyptian cosmic serpent, rushed out daily from its haunt in the west, accompanied by its grisly band of Qettu, demons The Egyptian goddess Sekhet, who helped Hathor in the annihilation of mankind through a flood (and who, after all, is only another personification of Hathor), is expressly addressed as the 'Great Lady of the West'

Observation of the Disintegration of the Tertiary Satellite

The post-stationary age, during which the Tertiary satellite drew closer and closer to, and moved more and more quickly round, the Earth, at last came to an end. It had been an age of long duration, because the great and steadily increasing velocity of the satellite had the effect of slowing down the contraction of its orbit. In the later periods of the post-stationary age the Earth had probably gained a great amount of stability, though the pull of the satellite had flattened the globe considerably, its swift and smooth transit caused few disturbances.

At last, however, the satellite came so close that its centre was only about 1·8 Earth radii away from the centre of our own planet, or the nearest point of its surface only some three thousand miles from the terrestrial surface. At this distance the disruptive tendency of the Earth's gravitation began definitely to act upon the cohesion of the satellite's material. To the amazement of observers living in tropical retreats or in the zones immediately bordering on the shores of the girdle-belt, the point of the satellite nearest to the Earth began to crumble and the fragments left the surface in a streamer of silvery tissue. The same happened on the point diametrically opposite. With this the disintegration of the satellite had started, and nothing in the world could have stopped it, or the terrific cataclysm it was about to cause.

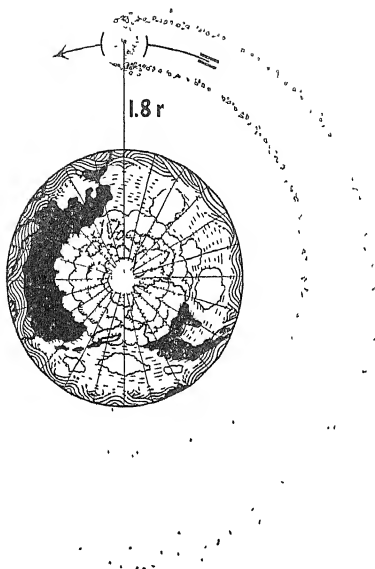


DIAGRAM 8

Beginning of the dissolution of the Tertiary satellite at a distance of 1.8 Earth radii. The stippled portion round the pole is to represent the great ice-cap, built up during the long approach of the satellite. The wavy lines round the equator are intended to show the extent of the girdle-tide. Between the girdle-tide and the ice-caps are the two life zones, of which the northern one is shown. The black portions are those parts of the present continents which may have been inhabitable, the white islands are the high ground in the present seas which was free from water, and probably also partly settled. The exact distribution of land and water is not attempted in the diagram.

Disintegration of the Tertiary Satellite

The beginning of the disintegration of the huge satellite must have been a very striking spectacle, an event which demanded to be put on record. It was the beginning of the finale of the Tertiary aeon. As may be supposed, however, notices of this stage are rather rare, the subsequent developments must have crowded them out. Nevertheless we find a number of extremely significant myths.

By far the finest is a tradition of the Ojibway, Algonkian Indians of the Lake Superior region in North America. The manitou Menabozhu, they say, warned his most intimate friend, a little wolf, not to venture out upon the ice of a certain lake in which the Serpent Chief, Menabozhu's particular enemy, lived. However, the cub, instead of being deterred by this warning, got extremely curious and ventured out secretly. But when he had arrived in the middle of the frozen pond the ice broke (1) and he was drowned. Menabozhu, missing his friend, guessed what had happened, but had to wait two seasons (2) before he could avenge the wolf's death. Then he went to the pond, where he could distinctly see the unfortunate wolf's footprints (3). At his lamentations the Serpent Chief put his horned head out of the water. Now Menabozhu changed himself into a log. This made the serpents very suspicious. They came out (4), and one of them, a score ells in length, coiled itself round the log and squeezed it with all its might. Every limb of Menabozhu cracked (5), but he did not cry out. This calmed the serpents, and they lay down again to sleep (6). Now Menabozhu returned to his natural shape and killed the Serpent Chief and three of his sons (7). This woke the other serpents and they escaped (8), howling, making a tremendous noise (9), and scattering the contents of their magic medicine-bags everywhere (10). Now the waters began to rise and to form boiling whirlpools (11). A pitchy darkness filled the sky and torrents of rain descended (12). The whole country, half

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the Earth, and finally the whole Earth, was submerged Menabozhu, in great terror, climbed the highest mountain, and then the highest tree on it, and even then the water rose to his very mouth! But it did not rise any farther, because just then the magic of the serpents was exhausted

This beautiful myth is so vividly descriptive that a commentary is hardly necessary. The disintegration starts, quite naturally, from the middle (1) of the doomed satellite's disk, the 'pond',¹ and makes, at first, only slow progress (2, 3, 6, a phenomenon insisted on by quite a number of myths). Then the first beginnings of a tail are observable (4). The powers of the dying satellite are waning, which causes earthquakes to start (5). The serpent-killer motif (7) is rare with the North American Indians. The disintegration now makes rapid progress (8). The first ice and ore blocks shoot into the terrestrial atmosphere (9), and descend upon the Earth's surface (10). The dying satellite's pull has now so much weakened that the waters of the girdle-tide begin to flow off (11) and the observers experience a Great Flood. The coming down of the second ice-fragment ring in the form of torrential rain (12) is faithfully recorded. That after this the 'magic of the serpents' was exhausted is quite a correct statement. The waters had now only to find their new level.

The second significant report comes from the other hemisphere, being a primitive Semitic myth. While its original form has been irretrievably lost, we find it preserved in one of the apocalyptic passages of the Old Testament, where it is used to furnish the grand background for some insignificant and spurious historical prophecy. In the Book of Daniel (11 31-5), this report of the beginning of the breakdown of the satellite appears in the following

¹When reading of this 'frozen pond' one can hardly help thinking of the 'sea of glass like unto crystal' of Revelation iv 6.

Disintegration of the Tertiary Satellite

foim Nebuchadnezzar, King of Babylon, dreamt that a 'great image, whose brightness was excellent', and whose form was 'terrible', like of burnished metals, appeared in the heavens. And from it a stone was cut out without any visible agency, whereupon the whole image soon crumbled into pieces. These the wind carried away 'like the chaff of the summer threshingfloors'. And the stone 'became a great mountain, and filled the whole Earth'.

Significantly enough the greatest cosmic book of the Bible, the Revelation of John, contains the words 'A door was opened in heaven'. Thus 'heaven', *ouranos*, is descriptive of the great 'covering' disk of the Tertiary satellite. The word *thyra*, 'door', stands for any kind of opening or hole.

The third important account, and probably the best one of all, is that of the Edda. It is contained in the Vafthrudnismāl, after the Voluspā the finest remnant of the sacred lore of our Teutonic ancestors. Gagnrāðhr (Odin) and the wise ice-giant Vafthrūðhnir, the keeper of mighty runes, ply each other with difficult questions. In the seventh question Odin desires to know how it was that Aurgelmir, the primeval being (the 'Ancient Roarer', synonymous with Ymir), could get offspring, seeing that he had not been able to find a wife. The giant's answer is magnificently lucid. 'The Icy One bore¹ a Maid and a Man, out of the Cunning One's foot sprang the Sixheaded Son'. In this quatrain we are not only told of what material Aurgelmir consists but also the manner of the birth of his progeny: they are 'offspring' in the truest and most literal sense of the word! The ice-debris left the dying satellite at the zenith and nadir points. 'Maid and Man' is only a figure of speech, conveying that the blocks of debris had the power of begetting further phenomena as they spiralled closer. The Sixheaded Son, Thrudhgelmir,

¹They escaped from under his armpits.

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may have been a cloud of several especially large fragments of the zenith side, in which case the other fragments came from the nadir side. From the seat of the Teuton forefathers, in the northern-zone refuge, the nadir stream may have been interpreted as the arm, and the zenith stream as the foot, of the ice-giant, the Tertiary satellite. That Ymir was 'slain' soon afterwards was an inevitable consequence of the 'birth' of his issue.

This myth well describes the marvellous development of things. The watchers of the heavens saw dazzling streams issuing forth from the centre of the satellite's surface, springing forth—like Kali from the 'eye' of the demon Durga, or like Pallas from the 'head' of Zeus, or as the eager angels of the Apocalypse, the bearers of the vials of wrath, sallied forth from the 'open gate' of the 'temple' by the 'sea of glass' at the bidding of the Great Voice.

The glittering tail grew longer and denser, and with its growth the satellite's surface changed. The familiar countenance began to show a weird grimace, terrible like the dread aegis, the tasselled buckler of Zeus.

Was the Tertiary satellite, in the first stages of its disintegration, the prototype of the aegis? The original *aegis* was, so we are told, a fire-breathing monster that leapt over the Earth in wide bounds, and was slain by Pallas Athene who wore its skin as a cuirass. The dying Tertiary satellite must have shown a halting unsteady movement, because the material did not come off in equal quantities on the zenith and nadir sides. The original *aegis* was a goatlike beast, in Daniel viii 5, the Tertiary satellite is likened to 'an he goat' that 'came from the west on the face of the whole Earth, and touched not the ground', the terrible-faced devil—for us a personification of the dying satellite—is also frequently pictured in the shape of a he goat. The aegis is sometimes regarded as synonymous with

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the head of the Gorgon Medusa 'which turned all beholders into stone' (ice) Indeed, the two *are* the same

The ice-blocks of the satellite's outer coat spiralled nearer and nearer Shining brilliantly in reflected sunlight, they now appeared as thick swarms of shooting stars the cosmic monster seemed to sweep the stars off the heavens with its tails

Soon afterwards the skies became densely clouded The ice-blocks which had entered the atmosphere dissolved into heavy clouds Presently violent gales, cloudbursts, and hailstorms began to rage The rains falling must have been like a sea descending The windows of heaven had come undone, the crystalline floor of heaven above had been broken, and descended in blocks In the Book of Revelation those terrific hailstorms are repeatedly mentioned 'The meat of the sun-spoiler fell upon the mountains of Rinda' (the Earth), we read in the powerful Forspállsloðh of the Edda, the 'Spilling Song', or the 'Prelude to the End' as it is also significantly called

Then the mud-rains started, and eventually the first core-fragments howled along their glowing paths through the air

In that grand non-Eddic poem of the Teutonic race, that Old High German Apocalypse, as we may fitly call it, Muspilli, the story of the Tertiary cataclysm is told as follows 'When the *blood* of "Elyah" [who is wounded in fighting with 'Satan', the Antichrist] drops down upon the Earth, the mountains begin to belch forth fire, no tree remains unscathed upon the land, the waters dry up, the sea disappears [*varsunulhit síh*, is swallowed up], the heavens begin to burn in a dull flame, *the Moon falls*, the Earth is on fire, no stone remains upon another' Tremendous earthquakes, attended by volcanic phenomena, rack the Earth's broad breast The great fire catastrophe is mentioned several times more, and with great insistence The

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title of the poem is also significant *Muspilli* means 'mould-spilling', that is, Earth destruction. The poem is supposed to be imbued with Biblical mythology. But many traits in its cosmological passages are so original that we cannot help thinking it contains relics of old Teutonic traditions, which have escaped obliteration because of their similarity with the story contained in the Book of Revelation. Whether the latter Book was really so well known in Germany at the beginning of the ninth century, when the poem was written, is an open question, and the answer is probably in the negative.

In that great well-spring of undefiled Teutonic lore, the Edda,¹ to which we must return again and again in this book, we find, above all, the two tremendous tales of the Volva and of King Gylfi. The Voluspā describes the beginning of the end as follows: 'The Moon-hound Garmr is loose and the Giants are in uproar, the Earth writhes and rolls, the mountains are rent and fall, chasms yawn, the heavens have burst and terrific rainstorms descend, the sea rises heaven-high and swallows the land, cutting winds bring snow [hail is meant], and the air is icy.'

Gylfaginning, that priceless summary of the Nordic mythological system, puts it like this: 'The Earth heaves, mountains leave their steads, trees splinter, the sea surges on to the land, for the Midgarth Serpent writhes in wrath. The Fenris Wolf [a name for the Tertiary satellite] rages through the heavens with foaming jaws wide agape [the slaver-flakes dropping from the Wolf's mouth are a well expressed word-picture describing the beginning of the disintegration]. His lower jaw grazes the Earth, his upper

¹*Edda* means 'wisdom, knowledge, sacred lore'. The meaning usually attributed to the word, 'grandmother, or grandmother's tale', is ridiculous for literature of such import. We must rather derive the word *Edda* from the Indo-Germanic root *weid*, to wit, to know, and compare especially the Sanskrit word *veda*, sacred knowledge, with it. The loss of an original initial *v*-sound is irregular, but not impossible.

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jaw touches heaven, he would open his mouth farther still if there were room! Now the Midgarth Worm raves along abreast of the Wolf, breathing venom [the stream of ice-debris leaving the side of the dying satellite, now interpreted as an independent being, the world-encircling Serpent, whose home, prior to the beginning of the end, had been the sea] The giantess Hyrrockin [a personification of the raging tempests caused by the rush of the ice-blocks into the atmosphere] rides through the heavens on a serpent-bridled monster' (another aspect of the dying satellite, now rather far advanced in the destruction of its ice-coat)

In the much despised Sibylline Oracles, those paltry fragments of a once great branch of sacred literature which is now irretrievably lost, we find the following cosmological passages referring to the beginning of the breakdown 'At the end of time the many-figured vault of heaven [that is, the crater-strewn surface of the Tertiary satellite] rends and falls upon the Earth and the ocean, and a great torrent of blazing fire descends, burning up both land and sea'¹ Again 'The powers of heaven rose in order to separate the combatants [that is, the warring 'angels', or stars, the disintegration is rather far advanced] Wrathfully they threw them out from on high, down to the Earth They plunged into the ocean and set the whole world on fire The heavens, moreover, remained starless henceforth'² And again 'A great star [a huge core fragment] will fall from heaven into the raging flood of brine and burn the deep sea [that is, the waters of the girdle-tide will disappear, stream off] and burn Babylon and the Italian land'³ (that is, east and west, as far as it is known to man, the whole Earth)

Plato tells us that an Egyptian priest, the treasurer of great stores of primeval knowledge, initiated Solon into

¹Third Book

²Fifth Book

³*Ibid*

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some of the ancient Egyptian traditions, including the myth of the Great Fire that had once swept over the Earth 'That sounds', he told the marvelling Greek, 'like an idle story, but the truth is, that after the lapse of tremendous spells of time certain alterations occur in the movements of the heavenly bodies which revolve round the Earth, and in the train of these changes destruction falls upon all that is on the Earth through a world-wide conflagration'

And Nonnus, in his tale of the Deluge of Deukalion, relates that Zeus, enraged by the shameful death which his son Dionysus Zagreus met at the hands of the Titans—significantly enough, *dismemberment*—caused a ravaging fire to fall upon the Earth, which afterwards was quenched by a universal flood

It is also significant that 'Titan' means 'firebrand'

Various Indian tribes of Brazil, the Cashinawa and the Tupi, for instance, and the Zuni Indians of New Mexico, tell in their myths of an 'interchange of heaven and Earth' The Cashinawa of Western Brazil have the following tradition 'One day it began to rain in torrents. It kept raining unceasingly and so much that no one was able to stir abroad. The lightnings flashed and the thunders roared terribly and all were afraid. Then the heavens [the Tertiary satellite] burst and the fragments fell down and killed everything and everybody. Heaven and Earth changed places. Nothing that had life was left upon Earth'

The Tupi describe in their myths how the Moon, with them the personification of all evil, falls periodically on the Earth and destroys everything. Even nowadays all baneful influences, such as thunderstorms and floods, are believed to be caused by that 'evil' celestial body

Fall of Cosmic Material

Leaving the myths of the observation of the disintegration of the Tertiary satellite for a while, we shall now try to discover where the cosmic material which was showered down upon the Earth is to be found. Generally speaking, three different kinds of material came down: water from the satellite's ice-coat, the floor-deposits of the satellite's shoreless ocean, and the bigger or smaller blocks into which its metallo-mineral core was riven.

The water was used to replenish the depleted supplies of the Earth, to swell the terrestrial oceans. We can gather from the extent of the so-called 'continental shelves' that up to a certain period in the Earth's past, generally considered to be the later Tertiary Age, the land area of our planet was considerably greater. Then, however, and probably rather suddenly, the shelves were submerged. The oceans, it is believed, received great quantities of water which had been tied in the huge polar caps of the Glacial Period. We do not deny this, but this quantity would not have sufficed to raise the waters suddenly to their present level. We are therefore forced to seek their origin outside the Earth.

The muddy and sandy deposits from the floor of the satellite's icebound universal ocean came down in the mud-rains and showers of 'blood' to which quite a number of myths refer. Out of this cosmic mud the terrestrial loess deposits were built up. That this 'cosmic loess' theory is better than the 'aeolian loess' theory, which considers

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this important material of the Earth's top crust to have been drifted together by the action of the wind, is borne out by the peculiar zonal distribution of the loess deposits. While the tropical belt and the land areas of the polar caps have hardly any loess, the northern and southern temperate zones have tremendous banks of it. If we consider that

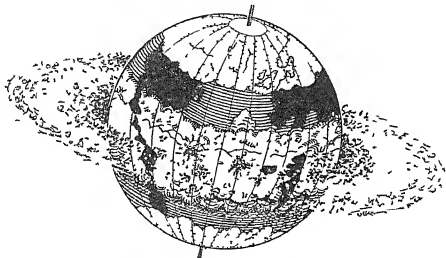


DIAGRAM 9

After the entire disintegration of the satellite, the girdle-tide, freed from its gravitational bondage, surges off north and south in wild ring waves the Great Flood. The inner portions of the debris ring are already descending upon the Earth in great rain, hail, and ore falls. The tropical highlands rise out of the waters and therefore a Great Ebb is registered there, they bear the brunt of the fall of cosmic material, however. The northern and southern life zones have the worst of the Great Flood.

most of the satellite's ocean-floor deposits came down in the tropics, this at first seems strange. But the loess could not deposit there, because of the girdle-tide. After the complete breakdown of the satellite the mud-saturated girdle-tide ebbed off north and south in tremendous ring waves. The waters, reverberating between the poles and the equator, deposited their burden in the least disturbed places, in the temperate

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zones ¹ Neither did the glaciated polar caps allow any deposition That is why in Europe and America the loess deposits are distinctly associated with the margins of the great ice sheets of the Glacial Period, never above the 57th parallel We can now see that this phenomenon is only accidental, and not causal

Next we must account for the whereabouts of the satellite's core material It will be objected at once that the Cosmic Ice Theory must fail because, apparently, there are no evidences of cosmic material lying littered about in tropical districts or elsewhere

Our reply to this objection is twofold First, we cannot really make any differentiation of terrestrial and extra-terrestrial material, for the satellites are made of the same 'flesh and blood' as our Earth Stratified rock alone is definitely a terrestrial feature Secondly, we must differentiate big and small, and heavy and light, masses

The big, heavy metallic core blocks of the Tertiary satellite plunged deep below the terrestrial surface, perhaps three or four thousand feet This means that probably none of the largest core blocks has ever been found The depth to which they plunged is, of course, merely conjectural, but electromagnetic research work would soon reveal quite a number of such subterranean ore blocks or nests The above figure was based upon the depth to which the famous Coon Butte meteor of Arizona plunged, some 1200 feet below the surface And this meteor was a comparatively small block

However, there are, scattered over the Earth, a number of ore-mountains which are evidently foreign to their surroundings At Eisenerz, in Austria, there is a huge mountain, consisting altogether of iron ore, they just quarry the ore there On the island of Elba, in Sweden, in

¹Compare the experiments of Chladni with sand on vibrating plates and disks

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Russia, in India, and elsewhere we find more or less considerable hills consisting of pure iron ore, mineral wonders of the world. In Orissa, India, in the jungle near the village of Sakchi, is a hill consisting of iron ore which is so rich that it yields almost 65 per cent of pure metal. In many parts of the Earth iron, copper, nickel, and other ores are found in superficial deposits. The only plausible explanation is that they were strewn there, by the dying Tertiary satellite.

Of the light materials which were rained down by the disintegrating satellite there is none more curious than the nodules of vitreous matter which we call obsidian, moldavites, or australites. The pitted or wrinkled appearance of these greenish or brownish buttons or bombs directly speaks for their cosmic origin. They are—naturally enough, from our point of view—only found in deposits of the latest Tertiary times. That ores are frequently found in the neighbourhood of such glass-meteor deposits only confirms their having come from the disintegrating satellite.

After this little excursion into the realm of geology, we shall conclude this chapter by quoting a few peculiar popular notions regarding the origin of some metals.

The Egyptians called iron the 'bones of Typhon', or the 'gift of Set', both these names belong to spirits of darkness and of evil, or, according to our representation, to the Tertiary satellite.

The Jews call iron ore *nechoshet*, which literally means the 'droppings of the [cosmic] serpent', a nonsensical term unless our interpretation of it is allowed.

The Peruvians called gold the 'tears wept by the Sun' and silver the 'tears of the Moon', both 'Sun' and 'Moon', however, are here only different names of the same cosmic phenomenon, the Tertiary satellite.

This mixing of names we also find in the Vedas, where the Sun is called 'gold-handed', and described as throwing gold to its pious worshippers.

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It is also worthy of notice that the Greek word for iron, *sidēos*, and the Latin word for star, *sidus* (genitive *sideris*, plural *sidera*), are related. The explanation usually given is that meteoric iron, the only metallic iron originally known, is meant. We may, with equal right, say that the ores which were showered down by the Tertiary satellite gave rise to this appellation.

Is it possible that these names were given to the metals as a result of observation? The idea seems fanciful, but not altogether improbable. Of course, we do not suggest that gold or iron has been seen to fall from the satellite, but after the great cataclysm, when men roamed over the vast wastes, they must have repeatedly happened upon unfamiliar metal blocks, and these they would surely attribute to the cosmic monster whose undoing had caused such a rain of material.

Dragons and Serpents

The figure of the dragon or serpent is peculiar to mythology, and it is probably the most puzzling of all the creatures with which this science has to deal. The serpent or dragon myths are not peculiar to any people, nor to any clime. Everywhere the creature would seem to be indigenous. It is familiar in north and south, in east and west, and everywhere its distinct reptilian shape is emphatically stressed. This has been taken as the chief evidence that all dragon myths came from some common original story of remote antiquity. In all myths the dragon takes the form of a terrible monster of lizard or snake shape, of huge bulk, but nevertheless of keen agility, generally winged, its body glittering in scaly coat of mail, with flashing fiery eyes, and armed with horns, fearful fangs, and claws. Its tail spans the Earth, sweeps the heavens. It breathes fire. 'Out of his mouth', we read in Job xli 19-21, 'go burning lamps, and sparks of fire leap out. Out of his nostrils goeth smoke. His breath kindleth coals, and a flame goeth out of his mouth.' It makes a terrible noise, that is why the dragon is usually called the 'thunder-bird' in many myths of the North American Indians. It sends abroad fearful stinks. All that comes of the dragon is bad. Its blood is poison. Out of its teeth spring up armed men. The dragon is a power of evil and of night, the arch-enemy of good and of light. It causes much destruction, the Earth trembles, the hills are cloven, the stars fall, the minds and morals of men are corrupted during its reign.

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Sometimes two dragons are mentioned. So in Mordecai's dream, quoted in the Additions to the Book of Esther vi 3 and 5, which are inserted before Esther 1 in the Greek translation 'There was noise and turmoil, thunder, earthquake, and terror on Earth. And, lo, two great dragons appeared, either ready to give battle, and they made a great noise. It was a day of darkness and of gloom, of trouble, oppression, distress, and terror on Earth.' In Jewish mythology the complementary figures of Leviathan and Behemoth, rulers of sea and of land respectively, are of frequent occurrence.

In the Chinese Shan Hai King we are told that the 'Enlightener of the Darkness' creates bright light by opening his innumerable eyes, and produces dark night by closing them. He is fiery of colour and has the body of a serpent, a thousand miles long. He never rests and his breath causes wind and wintry weather. Chinese dragon-lore further says. The dragon of the sky may make itself dark or bright at will. It can assume nine colours. Its breath descends as a rain of water or of fire. Gold is the congealed breath of a White Dragon, but a Purple Dragon's spittle turns into balls of crystal, glass is regarded as solidified dragon's breath. On each side of its mouth are gills or whiskers. The dragon of the sky can see everything, no matter how small or how far away. It makes much noise, and is itself deaf.

Though the dragon's usurped power is great, it is short-lived. There is no dragon without its slayer. But it takes the supreme effort of a superhuman agency to subdue the stubborn child of ancient night. The destruction of the dragon is the glorious crowning achievement of the hero of light.

And after the slaying comes the slaying. For the conquest of a dragon is frequently associated with creation. The serpent can corrupt and destroy, it can never ennoble.

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or build up. It has caused the coming into existence of the 'abyss', it is now thrown into it to fill it up. And so, while it cannot create, it is forced to contribute to the reshaping of things, while it is not the maker, it is the material out of which a mightier power fashions a new heaven and a new Earth. For the dragon or serpent of mythology is—at least as far as concerns us in our present inquiry—a cosmic phenomenon, in spite of its definitely saurian description.

In Iranian mythology we are told that a great dragon sprang from heaven to Earth to blight the good creation. The Old Serpent of the Apocalypse behaved in a similar way. Onniont, the great horned serpent of the Huron Indians, cleft mountains and rocks in its terrible career. The deity Kukulcan of the Mayas of Yucatan is called the 'feathered serpent whose path is the waters'.

This latter description brings us to a very important peculiarity in almost every myth the dragon or serpent is connected with water, so much so, in fact, that it often becomes the regular symbol for water. In a very great number of myths, also, the dragon is prominently and intimately associated with that world-wide catastrophe, the Deluge. Hence mythologists have taken dragons merely as personifications of the Deluge. This is the case with the Armenian feathered monster Van and the Egyptian Phoenix. The Egyptian name of the latter is *bak-bahu*, which also means 'to water' or 'to flood'. The hieroglyphic sign of the Phoenix is followed by three parallel wave lines, the water symbol. The very same symbol is also the 'number' or 'name' of the great 'beast' of the Apocalypse '666', the wavelike letter *vav*, ך or ם, thrice repeated, not 'six hundred and sixty-six', as artificially interpreted at a later date, but really 'six-six-six'. And this is actually the water symbol and has nothing to do with three *vavs*, except that it has a certain similarity in form. Old cuneiform texts call the time when the Deluge occurred 'the year of the raging

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[or 'red-shining'] serpent' In Jewish myths we are told that Leviathan and Behemoth always appear before a deluge. In fact, in all the dragon myths the monsters only appear in times of stress. The dragon portends the close of an aeon.

No doubt dragons have actually existed, are, in fact, still living, but the likeness of the cosmic monster can have been derived from no Comodo lizard. Of course, this saurian is quite impressive, but it is not truly terrible, nor is it able to breathe fire, a pronounced peculiarity of all cosmic monsters! And even when we grant—as we are compelled to do, by such documents as the rock drawings in the Hava Supai Canyon, to mention one example—that man has come into actual contact with the genuine dragons of geology, we must point out that the Brontosaurus and Diplodocus and Mosasaurus can hardly have been in the habit of emitting flames from their mouths and nostrils. The dragon of mythology not only makes the Earth quake and the hills reel and the waters swirl and boil, he is also the lord of the air. But flying saurians of overpowering bulk are not known. The giant among them, the Pteranodon, seems to have measured some twenty-five feet from tip to tip of its bat-wings. The impression given by such an animal can hardly have been greater than that which we receive from a small aeroplane.

The dragons of mythology are often described as guardians of hoards and givers of wealth. (A late echo of this is the story of the crowned snake and of the jewel in the toad's head.) But, as far as we know, no snake or crocodile amasses jewels or metals, nor can we suspect the monsters of bygone ages of Fafnir habits.

Reptiles are some of the most unintelligent and stupid of animals. In mythology, however, the serpent is frequently represented as wise, as gifted with a vast knowledge both of the past and of the future. It is also versed in the arts, it is often expressly stated to be a master in metallurgy.

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All that remains of the primeval monster, then, is its vague saurian shape, so strongly insisted upon by all races whose dragon myths are chronicled—and these races are as far removed as Aztecs and Assyrians, Red Indians and Indians proper, Peruvians and Egyptians, Chinese and Jews. Nevertheless, the 'Cosmosaurus' was not of the same flesh and blood as the lords of the Jurassic Age. It was a *thérion*, a monster, a beast, or a *teras*, a marvellous, significant, supernatural thing of terrible aspect, but never a *zōion*, an animal.

This book endeavours to show that the dragon myths, and their inseparably close companions, the deluge and creation myths, are reports of the cataclysmic end of the Tertiary Age, of the catastrophic breakdown of the predecessor of our present Moon. This is by no means so fantastic as it may appear at first sight, for theoretically the possibility of all the events we attribute to the disintegrating satellite is quite admissible, in fact, inevitable. The awkward question which still remains to be answered is: Why did those contemporaries of tremendous events, those deluge heroes, those divine ancestors who stood at the separation line of two world ages—why did they not call things by their real names and describe the overpowering thing in the heavens as a dying satellite instead of a living dragon?

We do not know. All we can do is to supply some possible reasons for the forms in which their reports have come down to us.

If appearances do not deceive us, it is clear that the 'Diluvians'—the deluge-survivors or 'Noachites', as we may call them—and their immediate descendants have taken a line of thinking, and of interpreting what they observed, which is very different from that of the scientists of today. They viewed things with the eye of the artist and described them with the pen of the poet.

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Of course, we do not know the very first forms of the myths. We must admit, however, that they have come down to us in the most practicable form possible. Very probably they were at first faithful reports, not unlike the description of the cataclysm in this book. But in a few generations the glowing details of the ancestral account would begin to pale. Their real significance could now only be grasped after toiling through much commentary. The sacred report now split into two parts: into the secret teaching, the direct and orthodox descendant, which finally became submerged in the expository matter, except in those rare cases where it formed the basis for a sublimated view of things, a religion, and into the popular tales, or myths proper. It is the latter which were handed down through the ages and which preserved, though under disguise, the original story pure and pristine. It is with these myths that we are chiefly concerned in this book.

They were idealized, allegorized, and put into a form which excited and satisfied the curiosity and imagination of the listeners who, asking again and again for its recital, ensured the preservation of the myth as part of the traditional lore. This form resisted the ravages of time, which destroyed the written records, but could not harm the old wonder-tales engraved in men's minds and memories. The cosmic monster became a terrestrial one, a saurian, and the uproar of the elements was interpreted as the noise of a great battle. A dragon-slayer was logically supplied, for a battle needs two opposing armies and a duel two opponents. The dragons are sometimes described very minutely, but this is surely due to late literary endeavours. Real dragons and dragon-fights were evidently familiar things, and readily lent themselves to association with the cosmic myths.

That the Tertiary satellite was likened to a dragon need not really surprise us unduly. Even nowadays it is a

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popular belief with many nations, as with the Chinese and the Hindus, that a dragon causes solar eclipses. Surely, in these enlightened days, nobody should mistake the Moon for the fabulous monster, or believe that comets are fiery serpents, or swords, or divine rods of chastisement purporting general upheaval, pestilence, dearth, and death. But, most probably, those crude beliefs are as much to the point as our refined knowledge, and, surely, much more poetical.

The dragon, the old serpent, the beast, are only theriomorphic forms of Satan. In connection with this, a significant story is reported of some aboriginal tribe in the wilds of Eastern Central Asia. When aeroplanes first roared over the vast, hardly known tracts of farthest Turkestan, the *yurt*-dwellers were not at a loss for a fitting name for the unbelievable something they quite reasonably called the flying-machines 'shaitan-birds', devil or dragon birds, although several hundred thousand years have rolled by since the last *shaitan* paid his compliments to our Earth!

The old wonder-tales of the world may be divided into two distinct groups: literary, and oral. The former were reduced to writing and brought into a definite firm shape at an early time, the latter still live—generally supported, of course, by pictographs—in the oral traditions of the peoples whose sacred property they are. The form in which these myths are presented to us is not strictly national, but depends, in a large measure, on the genius of their western discoverers and interpreters. The literary myths are those of our hemisphere, and are chiefly represented by the various Aryan and Semitic tales. The home of the oral myths is in the western half of our globe: America and the Pacific.

The Biblical dragon monsters are some of the most satisfactorily described, as far as literary precision goes. In the relevant passages we are struck by an important fact: the

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dragon is not a real reptile, it has only the likeness or the aspect of one. The dragon or serpent is really only a convenient form in which to describe a cosmic phenomenon, a shape, 'if shape it might be called that shape had none distinguishable in member, joint, or limb'

The 'likeness', then, only, of a dragon, serpent, or beast, an idea as bold as it is magnificent! Indeed, there were many points of resemblance. But above all we must remember the disturbed state of the atmosphere at that time, which allowed only glimpses of the huge, quick-moving, shining shape, in various effects of illumination, with its streamers of debris appearing like a feathery tail. There can be little doubt that the Tertiary satellite had the same aspect as our present Moon, being profusely pitted with 'craters', large and small. These may have appeared, under certain conditions of lighting, like the scaly, glittering armour of some giant reptile's body. The wild, crater-strewn regions in the high southern latitudes of our Moon look, to all intents and purposes, just as if they were covered with scales. Another interpretation of these ring-pits was that of 'eyes'. Several gods of ancient mythology, as well as certain angels of the Bible, and other shapes, such as 'wheels', 'thrones', 'horns', are described as being full of eyes before and behind. The craters appeared to the observers as huge peering eyes that looked coldly and cruelly down upon the Earth. These bright, all-seeing eyes may also have given the cosmic monster its name: one of the derivations of the Greek *drakōn* is from *derkesthai*, to gaze intently, to penetrate with looks. The dragon would thus be the 'Secret', the 'Keen-sighted One', the 'Thousand-Eyed'. The horns, which adorn the 'beast', may find an easy explanation in another lighting effect of the satellite and its craters.

Another etymology derives dragon from the Latin *torqueo*, *torquere*, describing it as something that twists. Perhaps this

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is the true etymology of the terrestrial 'dragons' and 'serpents', while the derivation from the Greek word refers only to the cosmic 'dragon'. The latter must have been the older one, which eventually became confused with the other.

The disintegrating satellite with its long streamers of debris must have offered a most tremendous spectacle. The faint silver haze of a comet's tail is familiar to many, it is an impressive sight in spite of its dreamlike tissue. But how truly grand, how awe-inspiring, must have been the tails of the dying satellite! Imagine the huge, rapidly diminishing, bright sickle, followed by a glittering sheaf, rising out of the west, looking very much like the semi-circular head-shield of a king-crab or trilobite, succeeded by the caudal spine of the former, or the array of segments of the latter. After the eclipse, with the Sun on the other side, the aspect of the breaking-up satellite totally changed. It shot down towards the eastern horizon looking, to all intents and purposes, like a fearful, fiery serpent, with its jaws terribly agape. These jaws measured more than forty degrees from fang to fang. The tail that followed spanned almost the whole of heaven. Several times a day, and day after day for a long period, this cosmic Proteus careered through the heavens, impressing its fantastic forms deeply upon all beholders.

A word about Proteus. From his ability to assume whatever shape he pleased, and always an unexpected and surprising one, this old sea-being was regarded, especially by the Orphic mystics, as a symbol of that original matter out of which the world was created. Proteus knew all things past, present, and future. His favourite shapes were the likeness of a serpent, of fire, and of water. Indeed, he was a 'subject' of Poseidon. In the light of the mythological deductions of the Cosmic Ice Theory, all this points very definitely and clearly to the probability that Proteus was originally a personification of the Tertiary satellite.

Dragons and Serpents

The Earth-spanning cosmic serpent appears in many myths. The Hindus tell of Sesha, which arched over the waters and held them in thrall. The waters were the path of Kulkulcan, the 'feathered serpent' of the Mayas. In Genesis the 'spirit of God' (a sublimated form of the conspicuously absent dragon or serpent) moved upon the face of the waters. The demon Vritra of Hindu mythology was named 'the Encompasser'. The Iranians told of a great fiery dragon that rose in the south and covered the whole zodiac with its enormous tail. The Eddic reports call Fenris's sister, the Midgarth Serpent, 'Jormungand', that is, 'Earth Spanner'. The dragon of the Apocalypse swept the stars from heaven with its tail.

Many myths relate that the cosmic serpent had more than one head. In Revelation xii 3, and xiii 1, the dragon of the Apocalypse is described as having seven heads. In Psalm 74, verse 14, we read 'Thou brakest the heads of leviathan in pieces'. Sesha, the cosmic monster of Hindu mythology, had a thousand heads. Homer's Scylla may be an echo of a many-headed cosmic dragon.

In Greek mythology we meet with Typhon, the youngest¹ son of Gaea and Tartarus, of the ancient terrestrial and chthonian powers. Typhon is described as a grisly, serpent-footed monster with a hundred dragons' heads, which roared, breathing flames, through the heavens until he was undone by Zeus with a thunderbolt and hurled into the abyss. He is also the personification of volcanic and seismic forces and the father of the dangerous winds, typhoons. All this is very significant in the light of our interpretation.

In Greek mythology we have also the figures of the

¹According to the mythological system based on the Cosmic Ice Theory, the *youngest* children of the gods and other powers are always the *latest* development in the aspect of the Tertiary satellite immediately after the beginning of its breakdown.

Dragons and Serpents

Uranidae, the sons of Gaea by Uranus Aegaeon (or Briareus), Gyges, and Cottus They are described as huge monsters with fifty heads and a hundred arms There is some disagreement regarding their behaviour One version says that they belonged to the race of the giants who attacked Mount Olympus, according to another, they sided with Zeus in the struggle against the Titans, and were set as guards over them when those rebels were thrust into Tartarus In essence, these two versions are only different aspects of the same phenomenon

Cerberus,¹ the 'dog' guarding the entrance to Hades, is described as having fifty or a hundred heads, or, according to another and even more significant version, he had only three heads, but a serpent's tail, and a fringe of hissing serpents round his neck His den was on the farther side of Styx, in the far west

The Moon-goddess Hecate, 'she who works [or shoots, or throws] from afar', a Titan daughter who had power over heaven, Earth, and sea, is pictured with three heads and six hands, holding, amongst other things, snakes

The Gorgons are frequently pictured as dragonlike beings, with human faces, framed with wild tangles of hissing serpents instead of hair, winged, with brazen claws and enormous teeth

After the final catastrophic breakdown of the satellite the great cosmic monster became the most important subject of the traditions of each people What images the ancient sage must have used in recounting the traditional lore! Before the mind's eye of each breathless listener there was that overwhelming picture of the fiery serpent raging right across the heavens And the hierophant pointed out to them the track it had left among the stars 'the Path of the Serpent' For this is an early Indian name of the Milky

¹The name Cerberus or Kerberos should be compared with Garmr, the Moon-hound of Teutonic mythology

Dragons and Serpents

Way, the Boiros of Biazil regard it as an ash-track left by a great conflagration

Fainter echoes of this cosmic 'conflagration' are to be found in the Greek Phaethon myth. In it the Milky Way is supposed to be the track of the fiery 'Sun' chariot, its scattered ashes

This identification of Phaethon with the cosmic serpent, Python, is, of course, hard to accept and philologically quite inadmissible, but we do not know the earliest form of this myth. Zeus' destruction of Phaethon by means of a thunderbolt surely resembles the fight of a god with a dragon very closely. The myths round Apollo-Helios seem to require reconsideration from the point of view of our theories.

In Job xli. 32 we read that leviathan 'maketh a path to shine after him, one would think the deep to be hoary'. Here the cosmic monster that domineered the 'sea which is above' has been practically tamed into what is interpreted as a crocodile or a whale or a sea-serpent that lashes the waters below into foam.

Genesis, of course, does not mention the serpent, nor its path, but a faint echo of it has remained. 'God set' the greater and lesser light 'in the firmament of the heaven' which 'divided the waters from the waters'. The Hebrew word for firmament, *rakia*, also stands for the zodiac, the 'vault' which rests on the twelve zodiacal pillars is only a secondary meaning of that Old Hebrew word.

The Babylonians believed that the galaxy was the joint at which the two celestial hemispheres were joined together, and where the outer fire of heaven shone through the seam. But as a rule we do not look upon a sphere as consisting of two hemispheres, any more than we consider a grapefruit as consisting of two halves. Therefore the celestial sphere must once have been split in two, for only something which has become unstuck can be joined together.

Dragons and Serpents

again. This splitting, entirely forgotten or no more mentioned, was caused by the Tertiary satellite

There must have been a close connection between serpent and zodiac in prehistoric 'science', but only faint echoes of this are still to be heard. Drawing upon ancient mythological sources which are now lost, the old Italian astronomer Sabbathai Donolo (about 940) says of the flying heavenly dragon, that 'when God created the two lights, the five stars, and the twelve signs, he also created the fiery dragon, that it might connect them all together, moving about like a weaver with his shuttle'

In Babylonian mythology the ecliptic appears as the furrow drawn by the 'solar bull' across the heavens. Usually, however, bulls or cows stand for *lunar* deities, most probably this is a reinterpretation.

A late echo of the serpent-path or chariot-track explanation of the Milky Way is to be found in the medieval story which tells us that it was made by the hoofprints of the horses of Attila and his Huns.

The explanation of the Milky Way as the track of the fiery dragon of our earliest forefathers was, of course, only an attempt to localize it in the heavens at a time when its exact position had been forgotten—if it ever had been exactly observed. Not every tribe had high astronomical notions, and, besides, observation must have been greatly hindered by the troubled state of the atmosphere in the days of the dragon. Direct establishment of its path must, therefore have been difficult even for men of high astronomical knowledge. In the clear dark nights of the post-satellitic age, however, the Milky Way must have stood out very distinctly, and the easiest way to account for it must have been to associate it with the ancient path of the fiery monster.

But the dying satellite could not possibly have taken the path of the Milky Way, if any guess as to its probable path

Dragons and Serpents

can be made, its orbit must have conformed with the ecliptic, the general plane of motion of the planets and their satellites. Indeed, various Aryan peoples definitely insist upon the ecliptic or the zodiac as the road of the cosmic serpent. An Iranian myth says that the dragon's tail spread over the whole zodiac. In Indian mythology the god Varuna made a pathway for the Sun and the planets—the ecliptic. No dragon is mentioned directly, but obviously some obstruction which had blocked this path had to be cleared away in order to make it

Dragon-Slayers

One of the most striking features, common to every dragon myth, is the fact that none of these monsters may continue its ravages with impunity for any length of time. Every dragon has its George. And the fight of the hero of light with the terror of ancient night is the theme of many immortal tales.

The Indians and Iranians have many myths in common, a reminder of a prehistoric time when the tribes were much more closely united than by mere ties of language. One of the most striking is that which describes the fight of a sun-god with a terrible monster of dragon or serpent form. In Indian mythology it is the god *Trīta* (later replaced by *Indra*) who conquers the dragon *Ahi*, the Iranians tell of the battle of *Thraetona* with the arch-serpent *Azhi*, or *Azhi Dahaka*. The Indo-Iranian monster is often significantly described as having a serpent growing out from each of its shoulders' debris streamers. Another Iranian myth calls the monster *Verethra*, and the conquering god *Verethraghna*, the dragon-slayer. In Hindu mythology the pair appear as *Vritra* and *Vritrahan*.

But the dragon-slayer myth is not restricted to Aryans, it is as world-wide as the dragon myth itself. The Jews tell of *Michael* and *Satan*, the Babylonians of *Marduk* and *Tiāmat*, the Egyptians of *Ra* and *Apepi*.

Another striking, though rarely found, feature of the dragon-slaying myths is the fact that it is sometimes a descendant who kills his sire. Thus, to give two examples,

Dragon-Slayers

Marduk kills his ancestress Tīāmat, and Chronos undoes his father Uranus. Translated into the language of this book, this means that later developments of the dying satellite's appearance 'overcame' the earlier ones.

A faint echo of such tales seems to linger in the world-wide traditions of dynasties of kings who are descended from serpents or dragons. In Greek, Indian, Chinese, and Peruvian mythology we find many examples of this aristocratic pedigree—and even Augustus and Alexander were accorded ophitical parentage. Of course, what is meant in most myths of this kind is that their heroes, as, for instance, Cecrops, were born or lived at the time of the serpent, indeed, having escaped from the cataclysm, they may have literally owed their lives to the monster.

There are some hints in the myths of the Jews that Eve was a woman to her hips only and that her body ended in a snake's scaly tail. Lilith, her predecessor in the affections of Adam, is described as a hooting, horned night-owl, preying, vampire-like, on human beings.

Some of the dragon-slayer myths, however, may describe real fights of our ancestors with descendants of the saurian kind. Rock drawings definitely point that way, and such myths as the one which describes Siegfried's feat clamour for an explanation of that sort. Much careful sifting of this material is called for.

We shall follow up the dragon-slaying motif in mythology at a later stage.

Gods and Giants

The battle of a god-hero against a dragon-monster sometimes takes the form of a fight between the gods and an aggressive race of Titans or giants. The view taken in this book is that there is no difference between the dragon with its crew of grisly monsters and the serried ranks of the giants, both being phases or aspects of the breakdown of the Tertiary satellite. In ancient mythology we find various indications of their close relationship or identity. The dragons drop abominable excrements, the Titans hurl huge rocks, fire is in one way or another connected with both. The serpents and the Titans belong to an earlier creation, they represent an old order of things, which, being violent, is opposed and overthrown by violence. Both the theriomorphic and the anthropomorphic monsters offer resistance in vain. They are conquered in the end and flung into the abyss, Tartarus, or hell. Their carcasses are often used as material for building up a new world.

Giants and Titans are generally described as being of human shape, but of 'gigantic' stature, but, on looking more deeply into the matter, they appear more as personified forces than as persons. It would almost appear as if their missiles only had been actually observed, as if their tremendous strength only had been felt, while the slingers or the shakers were supplied by reasoning how powerful a being might have thrown the rock or made the Earth tremble. Then again, giants are sometimes described as being of monstrous size, of fearful countenance, and with the tail of a dragon.

Gods and Giants

The anthropomorphic monsters are as little peculiar to any nation or race as are the dragons. In Semitic mythology we chiefly find the description of the great battle between the legions of the loyalists and the ranks of the republicans. It is significant, by the way, that a serpentine or dragonlike shape is often ascribed to the seraphim and cherubim, Satan is definitely identified with the 'Old Serpent', the devils are represented as winged, or bat-winged, and long-tailed.

In Greek mythology the fight for the supremacy in heaven and Earth is fought between the Titans, Cyclopes, and giants on the one side, and the Olympian gods on the other. Both parties are descended from Uranus and Gaea, which is significant, since Uranus personifies the huge Tertiary satellite. The descendants of Uranus are born in their correct order. The first were the Titans, the 'White Ones', the pieces of the dying satellite's ice-coat. Chironos, last-born of the Titans, mutilated his father with a scythe or sickle or curved sword, the last remnants of the ice-crust being ripped off, Uranus was no more, and Chronos, the personification of the metallo-mineral core, reigned in his stead. This also seems to be expressed in the name of the new ruler, which means 'the Accomplisher' (from a root *kra*, to accomplish). The sickle naturally points to the phases of the satellite.

After the mutilation of Uranus his blood showered down on the Earth (loess rain) and out of the gory drops sprang the Furies and the giants. The Furies, the 'Raging Ones', are personifications of the unprecedented storms which began to sweep over the Earth with the downrush of the ice-debris. It is significant that the giants are called the 'Earth-born Ones', for with the waning powers of the dying satellite the stability of the distorted geoid was at an end. Unceasing earthquake shocks convulsed the planet.

The birth of the gods, very properly, takes place now

Gods and Giants

the beginning of the disintegration of the actual core Chronos, it is strangely reported, swallowed his children This swallowing myth very probably refers to the 'afternoon shape'¹ of the satellite, which seemed to rush among the fragments of the debris 'tail' with jaws wide agape, apparently devouring its own offspring, the subsequent disgorging myth may be an intimation of the advancing disintegration of the satellite's core

As the youngest of the Titans did with his father, so the youngest of the gods did with his father With the birth of Zeus the cosmic battle entered upon a new stage The phalanxes of the fighters had sundered Here the Olympian gods leagued with a number of Titans, such as Ōkeanos, the girdle-tide, and with the Cyclopes, such as Steropēs, lightning, and Brontēs, thunder Their headquarters were in heaven The siding of some of the earlier race with their nephews is quite natural The other side consisted of the massed forces of the giants, Titans, and other enemies of the gods and of man The Earth is in their hands and they want to scale heaven But though they pile Pelion upon Ossa and heave and rend mountains, though in their titanic efforts they fling firebrands and hurl huge missiles against Olympus, their endeavours are in vain the gods are victorious the vanquished are cast into Tartarus

Such is our interpretation of the great Greek myth of the battle between the rude forces of the old order of things and the kindlier powers of the new Such, or similar, must have been the tale in the days before Hesiod, in the early days when the primitive Achaeans knew nothing of the elaborate and complicated mythology of a later date The natural propensity of the Greeks to turn everything they put hand to into a brilliant triumph of art gave a new

¹With the Sun in the west, the Tertiary body speeding towards the east had the appearance described above, the 'morning shape', with the Sun in the east, had its sickle open to the west

Gods and Giants

direction to the primitive myths. The lives and loves of the gods became the motif of every poem, their original uncouth deeds fell into abeyance, for they did not fit into the intricate mosaic of the new mythology.

The least sophisticated, the most robust, of all myths of the battles of the deities with the demons is the one told in the Edda. It does full honour to the proverbial openness and straightforwardness of the Teutonic mind, the mind of the noblest group of the Aryan. The Edda is an unspoilt treasure-house and its stories deserve a deeper study than has been accorded to them up till now. The Teutonic peoples wrote their holy lore in an uncouth form, devoid of the conceits of the other Aryans. The Eddic accounts are, to use a homely picture, like bannu brown bread, home-made but very good, bitten into after a long indulgence in the foreign pastrycook's refined creations.

The most remarkable poem in the Edda is probably the *Voluspá*, the great oracular tale of the Volva or sibyl of the beginning and end of things. Here we are only concerned with the report of the end, the Ragnarok, the twilight or doom of the gods. There are many parallels with the giant-war story of the Greeks, although the differences are just as striking. Eddic mythology also knows of a race of pre-existing *Iotnar* or giants, who are mostly inimical, though partly friendly, to the race of the *Aesir* or gods, some of whom, indeed, are their descendants. Though the gods have slain *Ymir*, the progenitor and chief of the giants, the manlike and beastlike monsters are not daunted as they muster for the last decisive battle. *Garmr*, the hell-hound, is barking. *Fenrir*, the grim Wolf, slips its bonds and rages through the world with open jaws that stretch from heaven to Earth. The grisly *Midgarth Serpent* rises out of the foaming sea, spreads over the Earth, and poisons air and water. The 'Sons of Destruction' come from the north, troops of frost-giants, and the hosts of *Hel*, *Loki*

Gods and Giants

himself steers Naglfar,¹ their horrible vessel From the south Surtr advances, the lord of the fire-realm, at the head of the bright Muspel Sons, flourishing his flaming sword

In the meantime Odin has consulted the head of Mimir, 'the Warner', who is famed for his vast and mysterious wisdom The runes he obtains forebode ill Now Heimdallr, the keeper of the Bifrost Bridge, sounds the Gjallarhorn and the Aesir and Einherjar arm for the fray The gods close with their adversaries on the battlefield of Vigridhr and a bloody fight begins Odin joins with the Fenris Wolf, but succumbs, Vitharr, his son, revenges the great god's death he tears the monster's jaws asunder The god Tyr, a son of the ice-giant Hymir (or of Odin), encounters Garmr and they slay one another Heimdallr has singled out Loki, the arch-foe in a friend's disguise, for his prey, he kills him, but is killed by him Freyr fights with the fire-demon Surtr, and falls Thor vanquishes the Midgarth Serpent, but is overwhelmed with the flood of venom which it pours out Now the foundations of the Earth tremble, the mountains come crashing down, the stars reel in their steads, and fall Surtr flings fire over the

¹This form is due to a popular etymology by which some word now lost but describing a vessel loaded with corpses, with a crew of wolves, and steered by a gigantic helmsman, was made to mean 'ship made of dead men's nails' (i.e. 'nail-ferry') Commentators suggest the form 'Nagvifar', attributing to it the meaning 'dark terror' Our explanation of this 'vessel' as a towering iceberg torn off from the glacier fringe of the polar ice-caps by the spreading waters of the girdle-tide and drifting south, peopled with a number of dead human beings and some still living animal refugees that had taken to it when they lost their asylum near the fringe, presupposes an original form 'Nagifar', meaning 'ship of fear' or 'floating terror' We must compare the first part of the word with such expressions for 'boat' as Old Norse *nokkve* (*nakve*), Anglo-Saxon *naca*, Old High German *nahho*, and, as Teutonic *naq-* appears in Indo-Germanic as *nav-*, also Latin *navis*, Greek *naus*, and Sanskrit *nau*, further more with Greek *nechem*, to swim The second part is related to English *fear*, Anglo-Saxon *fer*, danger, fear, harm, and Old Norse *far*, harm

Gods and Giants

whole world and the flames rise heaven-high, the Sun is darkened, the Earth sinks into the sea, the primeval powers reign supreme

But, though the gods are destroyed, their adversaries have not conquered, though the good is laid low, the evil is not triumphant. The cosmic forces spend themselves in their senseless, inevitable rage. When the great convulsion subsides, the ground is cleared for a new growth. Líf and Lífþrasir, Life and the Desire-to-live, have their chance. The Earth, young and fair, clothed in new green, rises out of the sea again, peopled by a new race of men. Vítharr and Vali, Odin's sons, have survived the cataclysm, and Modi and Magni, the sons of Thor and the inheritors of his hammer, while Baldr and Hothr are set free from the realm of Hel, and the six find the golden tablets with the runes that the rulers must know. But a greater god will come after them and reign for all eternity.

Desultory though the above representation must be, and fragmentary though the original is, yet we stand overwhelmed before this greatest of Norse poems. It is, like all Eddic poetry, of 'late' date, and has therefore been eyed with suspicion. But we must distinguish between form and content. It was written down only a few centuries ago, but it tells of things whose date is dimmed by the mists of the ages. The *Voluspá* should not be valued merely as the composition, not to say invention, of a poet writing at the time of doubt and insecurity, when the gnarled oak of the old Teutonic faith had already been uprooted and the supple palm of the new eastern religion had not yet filled its place. The unknown writer of this epitome of Teutonic holy lore, which is like Genesis 1-11 to Revelation xxii-21 condensed into a quarter of a thousand lines, only collected the fast fading traditions of the forefathers to put them once more before his countrymen. 'Vitudh ér enn edha hvat?' he urges repeatedly. 'Are you still mindful of

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all that, and of more?" Alas, they had already resigned themselves to the new belief!

Yet, what a truly titanic picture is unfolded before us. The story of Ragnarok is probably the most complete conception of universal destruction to be found in the rich thesaurus of the myths of the world. It has no direct parallel in mythology. For the gods, too, are destroyed! Imagine the Greeks sacrificing their Zeus, or the Jews their Yahweh, or the tribe of the So-and-so's on the isle of Whatdyecallit their local deity, even if they are not quite sure whether he is a bird or a beast or a stock or a stone—all for the sake of honesty. And the Eddic account is surprisingly honest. For this very destruction shows that the Teutonic gods were not merely conceived as personified forces of nature, which they primarily are, but also as real, though glorified persons. The cataclysmic powers, flood, fire-rain, earthquakes, were surprisingly impartial: they wiped out man and superman and spared only those few on whom Fortune smiled, and Luck.

We think that a detailed interpretation is superfluous. We have, of course, a composite myth before us. The slaying of Ymir (Mud-Roarer, Loam-Roarer, or Loess-Roarer) or Auðgmir (Primeval Roarer), out of whose carcass Earth and heaven were created, refers to the breakdown of the Tertiary satellite. It is a parallel, with another tendency, of the story of Ragnarok proper. The various monsters are various aspects of the dying satellite. Loki, who could change himself into any form he pleased, is the begetter of most of them: of the Fenris Wolf, and its descendant Managarmr, the Moon-hound, whose gigantic jaws now find a natural explanation in the 'afternoon shape' of the doomed satellite, of the Midgarth Serpent, which stands both for the tails of debris leaving the satellite and for the girdle-tide, and whose 'venom' is represented by its droppings which poisoned water and air. The

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frost-giants and the demon ship Naglfar are huge icebergs, parts of the glacier fringe, which have been lifted by the spreading waters of the girdle-tide and are drifting southward. Loki himself is the 'Closer', while his other names, too, are significant. Loptr, the 'Flickerer', or Bekki, the 'Foe' or 'Ficnd' Surtr, the 'Black One', is the satellite with its ice-coat off, and the fiery Muspel Sons, the 'Earth Destroyers' or 'Sky Cleavers', who, significantly, come from the south, are its fragments. The head of Mimir is the Tertiary satellite just at the beginning of the breakdown of the ice-crust. That the beginning of the breakdown was observed we know from a passage in the *Vafthrudnismāl*. These significant alterations in the familiar aspect of the satellite's surface were the warning which Mimir gave to his nephew Odin, not in words, but in *mimic* gestures, in runes, which could not possibly be misinterpreted. The name of Mimir must therefore be considered to be related with the Greek *mimēsthai*, to act, to imitate. His 'wisdom' is a consequence of his older descent. That he is regarded as a water-demon need not surprise us much, and that he reappears in the heroic saga of a later day, as a cunning smith, even less.

Satan

Of all religious systems ever conceived Mosaism is by far the purest, and its flower Christianity the most sublime. Systematically all coarse, gross, primitive traits were eliminated or spiritualized, until at last there came into being that lofty building of thought, which well-nigh reduces the mythologist to despair. Inspecting the sub-structure of the great edifice with magnifying glass and chisel, he may isolate fragments of true mythology, pondering over his big Bible, he may catch glimpses of earlier meanings between the lines and between the words. But, when he attempts to arrange his findings and interpret them, the theologian is not amused. Yahweh, the Dragon-Slayer, is not a good text for a sermon.

And yet it is only a question of whether we choose to say 'dragon' or 'devil'. For the dragon and the devil are only the theriomorphic and the anthropomorphic version of the same cosmic phenomenon—the dying Tertiary satellite.

A great number of parallels may be quoted in support of this statement. The dragon is a child of ancient night, a creature of chaos, the devil's own time is midnight, and he haunts chaotic places or produces chaos where he appears: witness the Devil's Beef Tub and the Devil's Staircase in Scotland, the Devil's Kitchen in Wales, and the great number of Devil, Teufel, Diable, and similar places everywhere in the world. The dragon is a keeper of treasure, and the devil grants wealth. The dragon's tail stretched over the whole zodiac, if you would conjure up the devil

Satan

you must draw a magic circle of twelve divisions, but be careful to draw it 'widdershins', that is, 'contrary to the way of the Sun', which really means 'in the direction of the motion of the great original devil' The dragon yields metals and is past master of metallurgy in Hebrew, as we have already remarked, iron ore is actually called *nechoshet*, dragon-dirt or serpent-filth, the devil was conceived as a smith and a patron of smiths The dragon poisons the air with the stinks it sends abroad, the devil cannot appear without a penetrating smell of sulphur Indeed, one of the devil's names is Satan, the Stunker¹ The dragon was thrown from heaven with its helpers, Satan and his partisans were cast into hell after their defeat The dragon is described as longtailed, red, and fiery, the devil is depicted as red in colour, with fiery eyes, and a long tail Usually, however, the devil appears in black, because he is a personification of the powers of night, the Hebrew *satar*, to disguise oneself or, rather, to wrap oneself in darkness, should be noted, and Surti, the name of the 'black' fire-demon of Teutonic mythology, should be compared The dragon never appears without noise, neither can the devil refrain from making a horrible din, the Hebrew word *shet* also means noise, turmoil of war, describing the part Satan played in the raging cataclysm The name 'devil' comes from the Greek *diabolos*, and is rendered as 'slanderer', the real meaning, however, is the literal one, for the word is derived from the Greek *diaballein*, to throw over, to hurl violently, to fling or shoot the 'slinger' The devil threw stones over great distances, just as the dragon swept down stars with its tail From Genesis to Revelation the devil appears as a serpent or dragon, the two are one The devil takes the place of the dragon in modern religion, his divine counterpart the place of the

¹ Cf *necho-shet*, cf also Hebrew *shatan*, to make water, *shet*, buttocks

Satan

dragon-slayer Upon the experiences of the Tertiary cataclysm all religious systems, including Christianity, were built

The devil is not dead, he is very much alive He lies ready to spring at us, roaring, as soon as his time has come The devil that is always with us is our Moon It gave us a foretaste of its powers, it 'was loosed for a little season' at its capture The dragon, or devil, is called the 'chief of the ways of God', and the cryptic letters Λ and Ω , beginning and end, refer to it In Indian mythology we read that 'the end of each age is announced one million years in advance by a deva' The word 'deva' is strangely assonant with 'devil' and 'divine', it is more than that it is cognate The Biblical evidence, that 'devil' comes only from the Greek *diabolos*, is not quite convincing, a similar word was probably current in Aryan speech before the tribes were influenced by Christianity Devil, deva, deity, divine, day, Zeus, Ju(piter), and so on, come from a root meaning 'to shine', and point to the overwhelmingly bright Tertiary satellite They also touch, in sense, the words given to our Moon Luna, or Lucina, the shining one, Lucifer and Phosphoros, the light-carrier meaning, perhaps, our present satellite in the last stages of its independence

Myths of the Great Fire

Less universal than the deluge myths, though not less striking, are the reports of a Great Fire which swept over the Earth as part of the great cosmic catastrophe which also caused the Great Flood. Their relative infrequency may be chiefly due to the fact that the bombardment with glowing or heated cosmic material was only observed by the inhabitants of a relatively narrow zone, which was mostly covered by the waters of the great girdle-tide. Men living farther to the north and south saw only the more or less distant fire-rain without experiencing much of it themselves.

It is the American aborigines who supply the greater number of these tales. At the time of the breakdown of the Tertiary satellite their forefathers lived in the northern and southern subtropical places of refuge.

The Ntlakapamuk, or Thompson Indians, a tribe of Salishan stock, now settling in the Thompson River region of British Columbia, say that in the time of their forefathers the waters rose to quench a Great Fire which raged in the world.

The Muskwaki Indians, settling in Western Canada, have a myth that Kitché Manitou destroyed the world twice, first through a fire, and then through a flood.

The Sacs and Foxes, Indians of Algonkian stock, settling in Iowa and Oklahoma, say that long ago two powerful manitous felt themselves insulted by the hero Wisaka. This put them into a fearful passion, and, intending to kill their

Myths of the Great Fire

enemy, they raged and roared over the Earth which heaved and shook under their angry steps. They threw fire everywhere where they thought Wisaka was hidden. Then they sent a great rain. The waters rose and Wisaka had to leave his hiding-place. He climbed a high peak, and then a high tree on the top of that peak, and at last, when all the Earth had disappeared under the waters, he saved himself in a canoe.

The Gros Ventres, Algonkians in Montana, say that the god Nichant destroyed the world first through fire and then through water. According to another myth of theirs, however, the flood was sent to extinguish the Great Fire which had charred all the world.

The Cato Indians of California say that the old world was bad and needed re-creation. The highlands were set on fire. Then the thunder-god, who lived in the world above, quenched the universal fire with a flood of hot water. Then it began to rain night and day, till the waters covered the greater part of the Earth.

The Wintun Indians, of Copehan stock, settling near the Sacramento in Northern California, say that when Katkochila's magic flint was stolen he sent a Great Fire from on high which burnt all the Earth. Then he sent a Great Flood to quench it again.

The Washo Indians of California tell of a great terrestrial upheaval which caused the mountains to blaze up, the flames rising so high that the stars of heaven melted and fell upon the Earth. Then the sierras rose up from the plains, while the other parts of the country were inundated.

The Tuleyome Indians of California have two fire myths. According to the first, Sahte, an evil spirit, set the world on fire, but the kindly Coyote sent the Great Flood to extinguish the conflagration. The second myth features a fire-thief. Wekwek, the falcon, stole fire but was not careful enough. It dropped from under his wings and

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set the whole world ablaze. Now Olle, the Coyote, sent a great rain. It poured down for ten days and ten nights and all the Earth was covered with water, with the exception of the mountain Conocti, which was not quite submerged. Later the waters subsided again.

In the Mexican codex Chimalpopoca, we are told that in the third aeon, that of fire, the god of fire descended upon the Earth in a rain of fire which burnt everything, while a hail of stones destroyed whatever was still left. Then the rocks rose in uproar and the red mountains (volcanoes) grew. The Fire Aeon was followed by the Water Aeon.

Another myth of the Aztecs definitely says that the Moon itself was undone by the Great Fire. In the beginning it was dark in the world, as the Sun had not yet been created. The goddess Metztli knew that this state of things could only be remedied by a great sacrifice. So she built a huge pyre upon which she burnt Nanahuatl, the Leper. Then she threw herself into the flames too. Thereupon the Sun appeared in the heavens. Nanahuatl, the Leper, is a very graphic picture of the 'crater'-pitted Tertiary satellite Metztli, who is also addressed as the bright and dark lady of the heavens, was avowedly a moon-goddess, and may therefore be regarded as another aspect of the Tertiary satellite. That after the end of both in a great fire (the breakdown) the Sun came into 'existence' again, is a well-observed fact.

Beyond the equator, the Arawaks of British Guiana say that the wickedness of mankind so enraged him who lives on high, Aiomun Kondi, that he twice ordered a general destruction: first he scourged the world with fire, and then he flooded it with water. A few men, however, contrived to escape from each catastrophe. They found refuge from the fall of fire in underground caverns, while at the time of the Great Flood the ancestral chief Maricewana and his followers were able to escape in a canoe.

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In the myths common to the Tupi-Guarani family of Indian tribes of Western Brazil, we find the story that Monan, the Creator, was so vexed with the perverse ways of men that he resolved to destroy the world by fire. The crafty sorcerer Irin-Magé, however, extinguished the great conflagration with a deluge.

The Maoris have the following magnificent myth: 'The god Maui was in need of fire. At last he got some through the offices of his old blind grandmother, Mahuika. As he was not used to the new thing, the fire got out of his control and set the whole world ablaze. Even he himself and his grandmother were endangered. In great fear Maui jumped into the sea for protection, but the water was boiling with heat. He now requested the help of Ua, the rain-god, but the fire burned on. He then called upon Nganga, the sleet-god, but the fire burned on. He next implored the assistance of the storm-gods Apu-hau and Apu-matangi and he also besought Whatu, the god of hailstorms, to help him, but the fire could not be lessened. Only when all the gods, in a final united effort, let all their deluges pour down at the same time, could the great universal fire be quenched.'

The Ahoms, a tribe of the Tai race, of Shan descent, who inhabit the Assam valley, reverse the order fire—water, and tell of a Great Flood which was followed by a universal conflagration.

The Ceghas of the prairies of North America say that the world was destroyed by fire and then by a great snow-fall (hailstorm).

A Great Fire without a subsequent Great Flood is also mentioned in a number of myths. These myths are told by peoples that experienced the breakdown of the satellite in tropical places of refuge.

The Mundari, a tribe of the Kols in Central India, say that the supreme god Sing Bonga, perceiving that the men

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he had created were evil, caused 'fire-water' to stream from heaven, to punish them

The Yurucaré, a tribe of Bolivian Indians, say that the demon Aymasufie sent from heaven fire which killed everything that had life, with the exception of one man

The Klamath Indians, settled in Oregon, tell of a great fire-rain (a rain of burning pitch) which the wrathful demon Kmukamtch sent to destroy the Earth

The Pawnees mention fire as one of the alternatives by which their god Tirawa may destroy the present world

The Yana Indians in California recall the Great Fire in a fire-stealing myth. Originally they had no fire, but a man looking from a mountain saw in the south the distant light of fiery sparks. Five men went out to steal some fire, but on the way back the Coyote, who had offered to carry the fire, dropped it and a great conflagration started. There was fire everywhere, the rocks split with the heat, the waters boiled, a dense smoke pall covered everything

A fire-stealing myth of the Tolowas tells of a Great Flood caused by a terrible, long rainstorm. All were killed with the exception of one pair who reached the highest peak. The descendants of this pair had no fire, but the Indians who lived in the Moon had plenty. From them a Shoshonian Snake Indian was able to secure a fire-brand

In Hindu mythology we find the belief that the creation is destroyed at the end of each Kalpa, or day of Brahman, by fire issuing from the mouth of the serpent Sesha

In Greek mythology we have the story of Phaethon, the 'Shining One', who, being allowed to drive the 'solar' chariot once, came so near the Earth that he would have burnt it, if he had not been speedily killed by Zeus by means of a thunderbolt

The Stoics and many other ancient philosophers taught that the world was doomed to destruction by fire

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In the Old High German poem *Muspilli* the Great Fire figures prominently

In the *Zend-Avesta*, the Holy Book of the Aryan Persians, we find the story of a great fiery dragon which rose in the south and destroyed everything. It raged for ninety days and nights. Then came a terrible rainstorm followed by a flood.

In Firdausi's epic poem *Shāh Nāmāh*, many parts of which are based on early Persian traditions, the fire-bringer is also a serpent-killer.

The Biblical records usually place the Great Fire in the distant future. In II Peter iii 5-10, we read 'They willingly are ignorant that the world that then was, being overflowed with water, perished. But the heavens and the Earth, which are now are kept reserved unto fire against the day of judgment.' But in 'the day of the Lord

the heavens shall pass away with a great noise, and the elements shall melt with fervent heat, the Earth also and the works that are therein shall be burned up.' And in Isaiah xxiv 6 'The inhabitants of the Earth are burned, and few men left.'

Josephus Flavius says that the 'Children of Set' taught that the Earth would ultimately find its end through fire and water.

The *Sidiā Rabbā*, the 'Great Book', a collection of sacred writings, also known as *Ginzā*, 'Treasure', of the Mandaeans, a very exclusive tribal Oriental Gnostic sect of great antiquity, tells of three total destructions of the human race, by fire and water, a single pair alone surviving in each case.

In the Babylonian *Gilgamesh* poem, the fire-ram which preceded the Great Flood is also mentioned. Its constituents are called the *Anunaki*, who rush through the heavens with their torches uplifted.

In Finnish poems we are told that Fire, the child of the

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Sun (the Tertiary satellite is meant), came down from heaven. There it had been locked in a tub of yellow copper and kept in a large pail of gold (various aspects of the disintegrating satellite)

The Voguls, nomadic in the Northern Urals, tell in one of their myths how Num Tarem, the Fatherly, meditated on a mode of destroying Xulater, the Devil. He caused a holy fire-flood to sweep over the Earth for seven winters and summers, and this killed everything—except Xulater. Even the raft of the few men who were saved became quite charred.

Guamansu, according to one tradition the father of the Peruvians, produced thunder and lightning by hurling stones with his sling.

In the Tonga Islands the god of earthquake is also regarded as the god of fire.

The Australians at Western Point, Victoria, have two versions of a fire myth. According to the first, Kaiakorok, the good daughter of Old Man Pundyil, and a culture heroine, discovered fire when engaged in destroying serpents. According to the second, Old Man Pundyil opened the door of the Sun (the dazzling Tertiary satellite is meant), whereupon a stream of fire poured down upon the Earth.

The Great Fire still finds a distant echo in the following: the flaming sword of the angel before the gate of Paradise, the fall of the angels—who, according to Jewish mythology, consist of ice and fire, and the Waberlohe, the wall of fire surrounding the castle of Isenstein, where Sigurd found the sleeping Brunhild. The last is a widespread myth, a variant of it is the popular fairy-tale 'The Sleeping Beauty'.

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There are something like five hundred deluge myths, told by about two hundred and fifty different peoples or tribes. All of them are remarkably similar, many of them, on the other hand, have individual traits. Their similarity has been taken as an indication that they are derived from the same original source, while their dissimilar passages are regarded as fanciful private additions to fanciful tales. The mythological deductions of the Cosmic Ice Theory reveal the deluge myths in a different light. The deluge myths have not a common source, but a common cause—the Deluge itself. This explains all the common features, the chief of which is the flooding or submersion of all, or practically all, land. The individual traits—which, however, are frequently common to groups of myths of nationally and racially disconnected tribes or peoples—describe certain aspects of a universal cataclysm which must have been zonally and locally different. And from the characteristics of their deluge myths we can form a general idea where the ancestors of the tellers of the stories had lived at the time of the Great Flood.

In the following pages only a limited number of deluge reports can be given, selected in order to demonstrate the different chief types.

Type A. The Tertiary cataclysm as experienced by the inhabitants of the tropical island refuges. Chief features: disappearing or receding sea, bombardment with cosmic missiles.

In the Apocalypse a myth has been preserved which

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tells us that there was 'a new heaven and a new Earth, for the first heaven and the first Earth were passed away, and *there was no more sea*' The fire-rain and ore-hail are frequently mentioned, their vehemence being stressed by the description of the sizes of the blocks, from that of a 'star'—the smallest, a shooting star is meant—to that of a blazing mountain—the biggest

The Mandans or Numangkake, a tribe of North American Indians of Siouan stock, significantly call the Flood *Mahnihokahasha*, or the Sinking of the Waters

The Quiché, Indians of Mayan stock, say that in the beginning there was nothing under the darkness of heaven except the sea (and, of course, the refuge mountain which sheltered their ancestors, but which is not mentioned) At the creative command of their highest deity, the Feathered Serpent (the dying Tertiary satellite), the mountains emerged like lobsters out of the waters Terrific rains and hailstorms and a fall of burning pitch (glowing core fragments are meant) made life so hard that the survivors, four men and four women, decided to take refuge somewhere else, where caves promised a better protection Later on they moved to another place of settlement, situated across the sea, whose waters divided for their passage The original version of the Jewish myth of the passage through the 'Red' Sea, when a 'pillar of fire' was in the heavens, may have been similar

Caves are frequently mentioned as places of refuge from the cosmic bombardment Besides the Quiché instance just quoted, and the Apocalypse, we find them mentioned in the myths of the Mexicans, the Peruvians, the Yurucaré of Bolivia, and others The fire-rain and cave myths frequently do not mention the Great Flood, as for those tropical districts it was only a sinking of the waters So we are told in a myth of the Yurucaré When, long ago, the demon Aymasue destroyed plants, animals, and man, by

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causing fire to fall from heaven, one man, who had foreseen the catastrophe, had richly victualled a cave to which he withdrew when the fire-hail started. To see if the fire was still raging he now and then held a long rod out of the mouth of the cave. Twice he found it charred, but the third time it was cool. Nevertheless he waited another four days before he left his shelter.

Humboldt tells us of the traditions of the Tamanaco, Maipuré, Rio Erevato, and other Indian tribes of Venezuela, who treasure memories of the time of the 'Great Water', when the waves of the sea washed the rocks of Encaramada. In the savannahs there is a rock called Tepumereme, or the Pictured Rock. Hewn into its faces can be seen the figures of animals, as well as symbolic signs. Such hieroglyphic pictures are also frequently found near the town of Caicara, between the Casiquiare and the Orinoco, between Encaramada and Capuchino, carved upon rocky cliffs so high that one could only get there by means of very high scaffolds. The aborigines of these districts, when asked how the pictures had been hewn into the rocks so high up, answered, smiling, as if they were stating a fact of which only white men were ignorant, that their forefathers had carved them there at the time of the Great Water, when they rowed about in their canoes. And, indeed, the waters must have remained up there for a very long time: this is evident from the marks the waves have washed into the rocks.

It is a pity that the Peruvians have not preserved any myths about the time when the waters of the girdle-tide ebbed off. Near Lake Titicaca we find a very interesting phenomenon: an ancient strand line which is almost 12,000 feet above sea-level. It is easily verifiable as an ancient littoral because calcareous deposits of algae have painted a conspicuous white band upon the rocks, and because shells and shingle are littered about there. What is even more

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remarkable is that on this strand line are situated the cyclopean ruins of the town of Tiahuanaco, enigmatic remains which show five distinct landing-places, harbours with moles and so on, while a canal leads far inland. The only plausible explanation is that the town was once situated on the shores of the girdle-tide, for no one can easily believe that the Andes have risen some 12,000 feet since the town was founded. On the other hand, if our view is correct, the ruins must date from so distant an age that no figure can even approximately be determined, it must be several hundred thousand years, at the very least.

We can only repeat that it is a great pity the miserable inhabitants of those highlands know nothing about the history of those tremendous remains.

To return to our myths of Type A. The Chinese have a myth which says that the god of fire conquered the demon Kung-Kung, who called himself the Lord of Water. This probably refers to the retreating girdle-tide after the beginning of the breakdown of the satellite.

The chief myth of Kashmir says that originally the whole country was covered with water and that an evil demon caused much havoc among men, plants, and animals. Kashyapa, a grandson of Brahmā, cut a gap into the hills at Varahamula (Baramula) and thus caused the beautiful valley of Kashmir to appear. According to another tradition, Kashyapa observed that the waters subsided. At his instigation Vishnu hastened the draining of the country by rending the mountains near Varahamula.

Type B. The Tertiary cataclysm as experienced by the inhabitants of the subtropical island refuges. Chief features: rising sea, bombardment with cosmic missiles.

The Thompson River Indians, as we have already remarked, believe that the Deluge was sent to quench a Great Fire that raged upon the Earth. The Mexicans say

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that the third aeon, that of fire, was followed by the fourth aeon, that of water. The Ahams or Ahoms, a tribe of the Tai race to which the Shans of Burma and Eastern China belong, reverse the usual order and say that a fall of fire followed a great deluge, this reversion is unique in this type of myth, but is surely only due to a redactor.

More myths of this type, such as the Maori tale of Maui and his grandmother, have been quoted earlier in this book.

Type C. The Tertiary cataclysm as experienced by the inhabitants of the northern and southern life zones. Chief features: absence of fire-land, but marked insistence on terrible rain and hail storms, rising sea, and the rise of the subterranean water-level.

The classical examples, of course, are furnished by the deluge reports in Genesis: 'All the fountains of the great deep [were] broken up, and the windows of heaven were opened. And the waters prevailed upon the Earth an hundred and fifty days.' Other Jewish myths, by the way, give the duration of the Deluge as 365 days. This figure, however, is purely fanciful.

The Tepanecas of Mexico say that the Great Flood was caused by a great rain which kept on without ceasing for forty days.

The Sacs and Foxes say that the thunder-god congregated all the clouds in the world and a rain fell such as has never been known before or since. Every drop was as large as a wigwam which reminds us of the hail-blocks weighing a hundredweight, mentioned in the Apocalypse.

In the Zend-Avesta we find the myth which asserts that the star Tistar appeared in three different manifestations. In each it rained ten days, altogether thirty. When it rained in its first form the drops had the size of saucers. Then the waters rose and prevailed over the whole Earth.

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According to another version, the raindrops were of the size of a man's head and were at times boiling hot

In the sacred Books of the Mexicans we read 'In the aeon Atonatiuh, the Age of the Water-Sun, the Sun was a semi-liquid mass. It had absorbed all the water of the Earth [This 'absorption' of water was, of course, only apparent, in reality the approaching satellite only drained it away into the tropical latitudes.] These enormous quantities of water it ultimately discharged over the whole Earth and thus caused a complete destruction of all life' (the waters of the satellite came down in a flood of rain, and the high-piled waters of the girdle-tide spread under the lessening pull of the dying satellite)

A peculiar kind of deluge myth is that which ascribes the Great Flood to the overflowing of wells. This points to the rising water-level in the aquiferous substrata of districts which were situated not too far away from the shores of the girdle-tide, owing to the increased permeation caused by the spreading of the tied waters

In the Additions to the Book of Esther vi 7-8, we read that in Mordecai's cosmic dream a 'great stream of water gushed out of a small well and rose higher and higher and swallowed up the proud ones'

Josippon bin-Gorion, in his collection of Jewish myths, quotes a number of similar reports. In one we read 'The fountains of the deep broke up first. Then came the flood from above. Then fire fell also, and ran, boiling hot.' Another Jewish myth says 'On the seventeenth day of the month of Cheshvan [the second month of the Jewish year, or, according to another version of the same myth, on the seventeenth day of the month of Iyar, the eighth month of the ordinary Jewish year] the male waters fell from the heavens while the female waters welled forth from the depths. They united and waxed strong and overwhelmed the Earth and all that was upon it.'

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The Gros Ventre Indians have the following myth. When the god Nichant wanted to cleanse the old world and make a new one, he not only caused a terrific rain to descend but also made water to gush forth from all cracks in the Earth. Thus he succeeded in flooding the Earth completely.

The Akawaits of British Guiana, the Taulipangs, the Aiekunas, and other South American Indian tribes of the Orinoco basin, have myths which are closely related. The Great World Tree (or some other tree with magical properties) was cut down accidentally or intentionally. The stump was found to be hollow and filled with water, which immediately began to flow out with great vehemence, for it was connected with the great subterranean springs.

*Type D. The Tertiary cataclysm as experienced by the inhabitants of the northern glacier fringes*¹ Chief feature—deluge of 'hot' water in a land of ice.

A very peculiar and most significant feature of some deluge myths is the insistence upon the temperature of the waters. Quite a number of peoples report not only a Great Flood, but specifically a flood of *hot* water. This has usually been taken as a fanciful ornamentation of a doubtful occurrence, but it finds confirmation in the teachings of the Cosmic Ice Theory.

The waters of the second girdle-tide had been in tropical latitudes for a very long time, moreover they had quenched all the satellite's glowing core material. Therefore they were really very warm. But temperature is a very relative thing—if we attempt to measure it by our sense of touch. *Lukewarm* water of, say, 60 degrees Fahrenheit would appear icy cold if sipped under an Indian sun, but an Eskimo

¹Of the southern fringes no myth has apparently been preserved, and is very deficient in the southern hemisphere.

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might refuse the same water in midwinter because it was too hot. We of the temperate zone would beg to be excused because we abhor tepid water.

We have divided the men of the age of the impending Deluge into those who lived in the tropical and subtropical island refuges, and those who lived in the two belt refuges between the shores of the girdle-tide and the fringes of the ice-caps, especially in the northern hemisphere, since land in the south is lacking. The second class of antediluvians we may regard as having consisted of shore-lovers, inland dwellers, and fringe-dwellers. The shore-people were too well acquainted with the temperature of the waters to find any noticeable difference when the Great Flood came. The inland tribes, most probably, also had a fair knowledge of the sea, since shallow bights would cut far into the land belts. But the men who lived near the fringes of the ice-caps, in daily struggle with the grim powers of cold, must have been amazed when the 'hot' waters suddenly swept down upon them. This event was as memorable as the Flood, and was duly handed down in their simple, honest tales.

The Makah Indians of Cape Flattery, Washington, and also the Quileute and Chimakum Indians, say that the waters of the Great Flood of old time were very warm. There was a strong current to the north.

The Voguls in Finland have a number of significant deluge myths. In one they report that a Great Fire raged in the world for seven years, it was followed by a Deluge of hot water. In another they say that those who could not save themselves in their boats were drowned in the Great Flood of hot water which roared over the land. Other myths of theirs tell of 'fiery waters', so hot that even their rafts caught fire and had to be quenched with—train-oil!

These stories are by no means impossible, especially as they are told by peoples living in rather high latitudes. A

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number of others, however, point us to the original seats of the ancestors of the tellers, which must have been much farther north than the present areas of settlement. We have a number of myths told by Indians living in warm California, for instance, the Salinans describe a flood of boiling hot water which covered the whole Earth. The Cato Indians speak of hot rain.

The Ipurinas of North-Western Brazil say that long ago the Earth was overwhelmed by a flood of hot water. This happened because the Sun, which is conceived as a cauldron full of boiling water, once tipped over. The Sun of this myth stands for the Tertiary satellite, the 'tipping over' is descriptive of the great seismic disturbances which attended the flowing off of the girdle-tide at the dissolution, while the temperature attributed to the waters tells us that the forefathers of the Ipurinas must have settled in cold districts at the time of the Deluge.

The Jews, too, had several traditions of a flood of hot water. The giants, the corrupt antediluvians, might have escaped drowning had not the waters, heated by the Lord, scalded them. And Talmudic lore asserts that the generation of the Flood was judged with 'boiling' water.

Whenever deluge myths make any definite pronouncement, they mention, with surprising unanimity, the 'sin and wickedness' of the generation then living as the cause of the cataclysm. This theme is common to Jews, Babylonians, Indians, Chinese, Polynesians, Mexicans, Peruvians, North and South American Indians, Atlanteans, and Aryans generally—a world-spanning girdle of unrelated nations and races. At first sight this emphasis on the apparent cause of the Deluge, this utilization of fear, looks uncommonly like a universal priestly trick for bridling the passions of the flocks. Nevertheless it must be regarded as an original trait of the myths and the outcome of observation. The 'late' character has only developed

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through the grafting of a system of taboo upon the reported facts

In the age immediately before the breakdown, and still more during the disintegration period itself, mankind must have sunk very low. He who outdid his brutalized fellows in brutality escaped from the cataclysm—if, by a lucky chance, his mountain retreat was not submerged or the keel of his salvation proved staunch. The Edda (*Voluspā*, *Gylfaginning*) speaks of this time as follows: Brother lifts hand against brother, the ties of kinship are torn, full of hate is the world and of shameless adultery, axe-time this is, and sword-time, shields are cloven, storm-time this is, and wolf-time—the end of the Earth. The Bible (Revelation vi 8, and similarly Genesis vi 11-13) says that 'power was given unto them [the 'apocalyptic horsemen'] over the fourth part of the Earth, to kill with sword, and with hunger, and with death, and with the beasts of the Earth'

It was this age of cosmic stress, culminating in the Deluge, which caused man to become 'sinful'—not this 'sin' which brought about the Deluge.

From this short review of the four main types of the tales of the Great Flood it has become clear, we hope, that the discrepancies in the different narratives are not fanciful, but necessary. Only if all deluge stories were practically identical, should our suspicions be aroused. And their diversity proves their sterling honesty.

Reports of a Sudden Wave of Hot Air

The air, too, which had been drawn into tropical latitudes, had to flow off towards the poles, ebbing to and fro several times, like the waters. Little imagination is needed to suppose that the air which had been piled up within the tropics was considerably warmer than that of the ice-fringe districts. This 'heat-wave' caused by the streaming off of the atmospheric girdle-tide is duly recorded by a number of nations. Again it is the peoples living in higher latitudes who furnish us with their significant tales.

The Loucheux or Dînjé Indians, the northernmost tribes touching upon the Eskimos, say that at the time of the Great Flood the canoe of their deluge hero floated upon the waters till they had evaporated through the great heat.

The Tchiglit Indians settling on the lower reaches of the Mackenzie River tell in their deluge myth of the great differences in the temperature of the air (caused by the ebbing to and fro of the atmosphere) the whole world was submerged, and nearly everybody who escaped drowning died of a terrible heat-wave, the few who escaped the heat-wave soon trembled again under a keen frost.

In one of the versions of the Deluge of Deukalion it is affirmed that the south wind alone blew when Poseidon loosed the waters upon the Earth and caused earthquakes by prodding the Earth with his trident.

A very significant notice of the sudden change of

Reports of a Sudden Wave of Hot Air

temperature from a cold or cold-temperate to a warm-temperate or subtropical climate is given in one of the old tales of the Jews. In it is reported that at the time of the deluge-hero Enos, worms and maggots appeared in the bodies of the dead and their flesh became corrupt. Evidently the corpses, stored in caves and other places, were now no longer preserved by the cold which had previously reigned in that part of the world.

Deluge Warnings

The period immediately before the Great Flood must have been eventful and ominous. The impending catastrophe cast its shadow before. With the complete disintegration of the satellite and the waning of its powers, the comparative stability of the distorted lithosphere had come to an end, and the earthquake shocks, increasing in number, duration, and strength, told everybody that something was going to happen. The state of the atmosphere, too, must have announced a great change, for endless cloudbursts or hailstorms descended from the dark, low, tempestuous clouds. The meteor-swarms of the core material lit the nights with a lurid glare and filled the air with shrieking 'voices'. Above all it must have been the hydrosphere, or rather its antediluvian form, the girdle-tide, which felt the loosening of the satellite's pull, and it began to spread.

If anything is truly terrible, it is the waters!

One of the myths of the Jews says 'In the time of Noah the waters used to rise every morning and evening and wash the dead out of their graves.' The sea had begun to encroach upon the land, and to a considerable extent, for even shore-dwellers do not bury their dead on the beach. 'When Noah saw this he knew "the time" was at hand.' There seems to be a confused tangle of myths telling us that 'before the end of this world those who have passed on before shall be resurrected', a version of which has also found its way into Christian theology, 'resurrection'.

Deluge Warnings

probably originally meant only 'exhumation', the 'day of doom' being the time during the breakdown of a satellite

These were the actual warnings which the antediluvians received. In the deluge myths of the world, however, we find stories of a very great number of warnings given by human, heroic, and divine persons. But even these men, heroes, and gods must have derived their knowledge from observation of the happenings around them. They only put the warning into words, they only interpreted the aspects of Earth and sky. Later, those who escaped the terrible disaster of the Flood gratefully remembered the words of warning and raised the man who had uttered them to divine rank. Often, probably, the warning voice was only introduced into the myth on the assumption that the ancestor who escaped must have been warned, by his god, totem, or fetish.

The best known of all deluge warnings is that recorded in Genesis vi 12-18. 'And God looked upon the Earth and said unto Noah. The Earth is filled with violence and I will destroy them with the Earth. Make thee an ark. And behold, I, even I, do bring a flood of water upon the Earth, to destroy all flesh. But with thee will I establish my covenant.'

It seems, however, that the coming of the Flood was not only revealed to Noah, in private, but also to all the 'sinful' generation of that time. But they paid no heed to the warnings. 'There were giants in the Earth in those days', Genesis tells us, but tells us nothing about them, and leaves us wondering and dissatisfied. These giants, too, were warned, as we can learn from Jewish myths, but they did not care. 'If the flood should really come it could not possibly submerge us,' they said. 'We are too tall. And as for the springs of the deep opening—why, we can easily close the cracks up with our feet: they are quite large enough.' And, indeed, when the Deluge came they resorted

Deluge Warnings

to these tactics, but God heated the waters and the flesh of their bodies was scalded And thus they perished

Another Jewish tale says that Noah bruited the news of the impending danger abroad, but was met with incredulity and scorn The wicked men asked him scoffingly what sort of universal destruction he thought would come upon them and their children And even if he should prove to be right they were prepared for all contingencies If there was to be a fall of fire, had they not the animal called '*alitha*', whose name alone was a powerful fire-spell? If it was a case of water welling forth from the ground, had they not brazen sheets wherewith to cover the whole Earth, so that not a drop of water could get through? And, in the event of the waters descending from above, they had sponges to suck up all moisture!

Disregard of the warning words of a divinity or hero is the subject of a great number of myths of different peoples To mention only one more example in addition to the above, the Passamaquoddy, Algonkian Indians settling in Maine, have the following tale Kuloskap, or Glooscap, told the people of the coming deluge They said that such news did not bother them a bit He said that the water would get over their heads That would be a very wet business, was the reply He advised them to be good and to pray They only ridiculed him He told them that the deluge was really quite near Thereupon they gave the Flood three cheers! Now the deluge really came over them However, Kuloskap saw to it that they were not killed he caused them all to be changed into rattlesnakes!

In the Book of Enoch, in which precious fragments of great tales of extreme antiquity lie scattered among the fantastic conceptions of later times, the flood warning is given as follows (x 1-3) 'Then the Most High, the Great Holy One, sent Arsjałâljûr to the son of Lamech [Noah] saying "Tell him in my name, 'Hide thyself" and then

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reveal to him the things that are impending For the whole Earth shall presently be destroyed by a deluge and all that is alive shall perish Then teach him how he may save himself and how his seed may be preserved for all time ” ’ In another passage (Enoch liv 7-9) the warning runs ‘In those days punishment will come from the Lord of Spirits All the windows will be opened of the chambers of the waters above the heavens, and the sluices will be stove in of the sea of waters that is below the Earth The waters above the heavens are masculine and those beneath the Earth are feminine The waters will join the waters and at their embrace the Earth and all that lives on it shall be destroyed ’ In yet another of these valuable interpolations, which professedly belong to an ‘Apocalypse of Noah’, we read (Enoch lxxv 1) ‘In those days Noah saw that the Earth was sinking into the waters and that its destruction was nigh And he arose and went to the end of the Earth [that is, the entrance to heaven] and cried aloud to his grandfather Enoch saying “Hear me! Tell me what is the matter with our Earth that it should be so fatigued and shaken, lest I perish with it for want of knowledge ” And there was a great turmoil on the Earth, and a voice was heard from heaven, and he fell on his face ’ What the message was is not reported, but Enoch, the favourite of God, was indeed the right person to consult Even when still alive, this ‘father of the sciences’ had had dreams and visions of the violent and general destruction which was to come (Enoch lxxxiii)

If we are to believe another Jewish myth, Noah himself did not seem to have much faith in all these warnings (or in the ark?) and did not enter the vessel till the water reached his knees His wife waited even a little longer, and was eventually lured in only by a trick This made her a comic figure right down to the time of the mystery-plays

The deluge warning was not always given by word of

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mouth. It was sometimes given in writing, in the shape of holy books sent, or lent, to the deluge hero by the godhead. Among the Jewish myths, for instance, we find the story in which 'Raphael gave Noah a holy book written in sacred secret signs. For a long time the patriarch puzzled over it in vain. Try as he would, he could not make out their meaning. But when at last he had found the key to the system it was as if the words he read were spoken to him by a voice. From this precious book Noah learnt of the impending flood, and he found detailed instructions as to the building of an ark.' According to another myth, or another version of the same myth, it was the angel Raziel who gave Noah the book. It was not a book proper—that is, a scroll—but a slab of sapphire upon which the words of wisdom were graven in holy glyphs. After Noah's death this book went from hand to hand, till it came to Solomon, and evidently became the source of his wisdom. Then it seems to have been taken up to heaven again.

A warning given to the favoured hero is peculiar to practically all deluge myths. Frequently the warning is given by the hero's real or divine father. So Deukalion is warned by Prometheus, Parachta, the deluge hero of the Ostyaks, by his father Turim, and Noj of the Votyaks by Inmar, in the Chaldaean report Xisuthros gets word from Chronos, Utnapishtim, the Babylonian, is warned by Ea. The Telchines, a Greek mythical people, abandoned the island of 'Rhodes' because they foresaw that it would be inundated, but Apollo, in the significant shape of a *wolf*, scattered them and Zeus overwhelmed them with a deluge. Tumbainot of the Masai is warned by a god, the good spirit Aba warns his beloved Choctaws, in Mexican mythology, the god Titlacuhuan warns the just man Nata and his wife Nena. The Wichita Indians heard a voice from heaven, in the Apocalyptic voices from heaven are repeatedly mentioned. The Flood was foreseen by

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Kunyan of the Hares, while the Thinkit were warned by their wizards. The ancestor of the Bolivian Yurucaré foresaw the great fire-flood and took refuge in a cave. An old man warned the Chippewas, an old man also warned the Indians of the Wiyot Territory and the Tepanecas of Mexico, whereas the Huichols of New Mexico received notice of the Flood from an old woman. Marerewana of the Arawaks was informed of the impending Flood by the god Atumun Kondi Tupu, the god of the Tupi, warned the wise man Tamanduaire. A myth from the Pellew Islands says that the old woman Milatk was warned by Kalits, a class of demigods. On Raiatea, one of the Society Islands, the sea-god Rua-Haku warned a fisherman of the Deluge.

In a number of very interesting myths we are told that men were informed of the coming disaster by various beasts. Animals, indeed, seem to have a sense of anticipation for meteorological or seismic events. It was a dog that discovered by his behaviour the fact of the impending Deluge to his master, the Cherokee deluge hero. One of the Peruvian deluge heroes was warned by his llamas. The deluge heroine of the Papuans was warned by a snake. The Navahos observed great crowds of animals running from east to west and concluded that some disaster was approaching. In Greek mythology, Megaros, the ancestor of the inhabitants of Megara, is warned by cranes and advised to seek refuge on a certain mountain.

Of course, the beasts in most stories of this type are only animalized men or divinities, as, for instance, the Fish (Vishnu in the Matsya Avatāra, and Brahmā) by which the Manus Varivasvata and Satyavrata were warned, or the Coyote of the Shasta and other Indians, or the Dog of the Chimaniko, or the Eagle of the Pima.

Divine messages are often communicated not by articulate sounds, but by the voices of animals or the noises produced by inanimate things.

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The best-known examples of this kind of myth are to be found in the Bible, where the Lord God frequently speaks in thunder, the Apocalypse mentions 'voices' as well as thunder and the roaring of wind and waves. These droning, wailing, howling, shrieking 'voices' usually communicate threats and abuse. They are caused by the cosmic missiles cutting through the terrestrial atmosphere. That the voices gave a perfectly clear message, intelligible to everyone, will surely be corroborated by all who served in the Great War. The dismal wail of shrapnel and other projectiles, themselves invisible, said quite distinctly 'Duck down!' or 'Throw yourself flat on the ground!'—an order which was invariably obeyed.

The Caingang Indians of South America say that those who had escaped from the Deluge tarried on a high mountain. Nothing was to be seen in the pitchy darkness, but then they heard the voices of the saracura birds—waterfowl, uttering piercing screeches—that had come to help them to regain their submerged country. They brought earth in baskets and threw it into the waters, whereupon they slowly subsided. What is described is, of course, the subtropical refuge of the Caingang forefathers was partly submerged when the waning powers of the disintegrating satellite caused the tropical girdle-tide to spread, the shrieks of the saracura birds are the descending core-blocks cutting through the air, the earth which they threw into the waters is these blocks plunging into the sea, and, with the further ebbing off of the girdle-tide, their country naturally rose out of the waters again, and became very much bigger than it had ever been before.

The Tsimshian Indians of British Columbia say that the Great Rain which caused the waters to rise, the Earth to be submerged, and the people to be distributed all over the world, stopped soon after they had heard a noise like the clanging of a bell.

Ark Myths

By far the greater number of deluge myths relate that the hero escaped the general destruction by taking to a vessel and sailing to safety. The universality of this trait is really striking and surely indicates a high standard of shipbuilding and navigation in prehistoric days.

As we have just seen in some of the Jewish myths, the deluge warning, and the usual accompanying suggestion to build some vessel, were often given to a whole nation, but apparently followed by very few individuals. Probably most people felt quite safe in spite of the raging of the elements around them. Indeed, having been born in a time of stress, they hardly thought that things might change, for better or for worse. The beginning of the disintegration, however, must have been a signal which could not be mistaken. But by then it was generally too late to make elaborate preparations for escape on a vessel, and the only other way to save oneself was to reach the top of a mountain of sufficient height. A small subdivision of the mountain-refuge myths is the class of stories which allows the ancestor to climb a high tree. Men and beasts that were unable either to climb to safety, or to take passage into the New Age in an ark, perished in the waters.

The best known of ark myths is that in *Genesis vi 14-16*, in which God says to Noah 'Make thee an ark of gopher wood, rooms shalt thou make in the ark, and shalt pitch it within and without with pitch. The length of the ark shall be three hundred cubits, the breadth of it fifty cubits,

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and the height of it thirty cubits. A window shalt thou make to the ark, and in a cubit shalt thou finish it above, and the door of the ark shalt thou set in the side thereof, with lower, second, and third stories shalt thou make it '.

What immediately puts us on our guard is the enormous size of the vessel. Accepting a cubit of 17.58 inches, the length of the ark was about 440 feet, its breadth about 73 feet, and its total height from keel to roof about 44 feet. Its floor-space was nearly two acres! It could be favourably compared with some of our modern vessels with a displacement of about 13,000 tons. We feel that, even with all the divine help available in those days, such a feat of ship-building could not have been executed. We cannot, therefore, value the Biblical measurements as belonging to the original myth, but only as a late, as a very late, addition. In fact, the very source of the ark-building passage reveals the reason of the presence of this speculation as to the size of Noah's vessel, for it was taken by the editor of Genesis from a Priestly Codex.

From early times the size of the ark and the manner of its internal arrangement was the theme of much learned and lengthy discussion. Many ingenious and curious theories were advanced as to the number of animals actually taken, the kinds and quantities of food necessary for them, and so on. The Biblical size was considered as insufficient by some, but as ample by others. Even the ancient Jewish sages had already arrived at fantastic figures. The question whether 'gopher wood' meant timber taken from the cedar, the cypress, or the pine, was hotly debated. Everything was commented on except the Deluge from which the ark was to have provided the means of escape.

To discuss anything apart from the fact that there was a vessel in which a family and some of its chattels were saved, is idle. If the building of it was inspired by a deity, surely

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not only shipyard specifications were furnished, but also elaborate stowage plans. If not, then the entirely uncanonical, but very amusing, interminable songs of the immense bother Noah had in getting his stock (including his missus) loaded must have a grain of truth in them. Perhaps they represent an oral tradition which has trickled right down to our times, unnoticed hitherto by the ark-myth collector.

Noah was greatly ridiculed when he began building his ark, we read in the old Tales of the Jews, and even his wife was scornful. Apparently the vessel was built on a little eminence rather far from the shore, a very unlikely place. However, another Jewish myth says: 'There were many who did not believe that Noah was a fool, and they built themselves arks, too. But'—not having such good specifications—'they did not build them strong enough. The whirling waters destroyed them and their crews were drowned.' That is why such value is laid on divine inspiration, and often, indeed, on active divine help. In the Book of Enoch (lii 2) a passage reads: 'The angels are making a wooden building. When they have completed their task I will place my hand upon it that it may be preserved.'

Noah apparently built the ark with the help not only of his sons but also of some journeymen carpenters, to whom, it seems, he had promised free passage in the event of a deluge. However, as the myth alluded to in the Vision of Piers Plowman says, they never got inside and so were lost.

The ark (from Latin *arca*, a chest) was probably what the children's toy still shows it to be: a clumsy, cumbersome, roofed box, apparently with neither mast nor helm, allowing of little or no navigation, built only for passive drifting. But in spite of all its clumsiness it must have had a certain shiplike shape. This cannot be said of the box that Utnapishtim, the Babylonian, built on Ea's advice. It was a cube of 120 cubits, that is, about 175 feet

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in length, breadth, and height This would give it a great advantage, for it could not possibly careen, but the contents of the cube—loaded in the following order, probably in accordance with the value which Utnapishtim attributed to each—gold, silver, seeds, family, servants, animals, and craftsmen—got sadly tumbled about as it lumbered along through the angry waves

According to the Chaldaean deluge myth told by Berossus, which is quoted in the writings of Alexander Polyhistor, the last antediluvian king, Xisuthros, built a vessel of gigantic dimensions It was fifteen stadia ($1\frac{3}{4}$ miles) long and two stadia (400 yards) broad Evidently this leviathan among arks was not considered absolutely safe, for though it was crammed with valuable things the most priceless of all treasures, the sacred writings, were not stowed in it, but buried at Sippara In the North Syrian deluge myth Xisuthros appears under the name of Sisuthes

Of the deluge myths of the Aryan peoples, only very few feature the ark motif The most famous is probably the Greek story of the escape of Deukalion and Pyrrha in an ark, as told by Apollodorus An echo of a Greek ark myth is also to be found in the story of Danae She had become the mother of (the Gorgon-killer) Perseus by Zeus, who had descended in a shower of gold (fire-rain motif), and her father Acrisius caused her to be exposed with her son on the sea in a chest The cosmic background is distinctly visible, although evidently several strands have been woven together in this myth The Purāṇas tell of the Indian deluge hero Satyavrata whom Brahmā presents with a ship of vast dimensions, ready to be stowed and victualled It is drawn into safety by Brahmā himself, who appears in the shape of a fish, a million miles long In the Satapatha-Brahmana and the Mahabharata versions, the hero Manu has to build the ark himself The motif of its being towed into safety by a huge fish is common to all

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That this 'fish' is the dying Tertiary satellite hardly needs to be stressed

In the Edda the blood of the giant Ymir caused the deluge in which the whole race of giants was drowned except Bergelmir and his wife, who escaped in the boat Ludr. A peculiar Norse ark myth is the following. After Baldr had been killed through the wiles of Loki, the gods took him to the seashore to his ship Ringhorn, the largest of all vessels. The gods tried to launch the ship and then to set fire to it, as was the custom among the Norse tribes, but they were unable to move it. So they sent for the giantess Hyndel. She came riding on her serpent-bridled Wolf and gave the ship such a push that the launching-slide upon which it stood caught fire and all the Earth shook. Then Baldr's body was put upon the pyre which had been built up upon his ship. His wife Nanna, his horse, and much of his personal gear were also piled on, and fire was set to it. Thus Baldr 'sailed west' (Gylfaginning). Evidently the slaying of Baldr with a weapon made of mistletoe (or some other material which had never been thought of for lethal purposes before) has been superimposed on a cosmic myth, whose original trend has once more become distinctly visible.

A Welsh myth tells of Dwyvan and Dwyvach who escaped the Great Flood in a big boat.

The Votyaks and Ostyaks of Western Siberia have a number of myths with a common element, peculiar to them: the destruction of aiks by the devil Noj of the Votyaks, and Parachta of the Ostyaks, built big ships, single-handed and in secret, which took the former three years and the latter thirty. The devil, who apparently did not want anyone to escape the Deluge, but did not know where the vessels were hidden, knew that he could only succeed with the help of the shipbuilders' wives. So he taught them to brew intoxicating drinks with which

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they might serve their husbands. And in their drunken state the men babbled. The devil, who in each case overheard them, immediately sped to the secret shipyards, evidently situated at a considerable distance from the shore, and destroyed the practically finished arks. Thereupon both Noj and Panachta had to set to work again. It took the Votyak hero two years to build another vessel, but the Ostyak hero and his family would surely have perished had not his heavenly father Turim helped him to make another ark in the record time of three days!

The destruction of ships by the 'devil', of course, has to be interpreted as havoc caused by waves of the slackening girdle-tide finding their way far inland and devastating whatever lay in their path.

The Choctaw Indians of Louisiana say that their forefathers were told by the good manitou Aba to build boats and to provision them. But, when he showed them the place where the vessels were to be built, most of them lost all confidence in his mysterious communications and went their ways. Only one family took Aba's words for the truth and were ordered to have their ark finished by a certain day. When the elements began to rage and the waters rose higher and higher, the others, too, hastily prepared boats and rafts, but the angry waves dashed them to pieces. When, however, the waters reached the hill where the faithful one had built his vessel, they lifted it and it sailed away without taking harm.

The construction of arks on high ground far away from the seashore is a world-wide feature. It must not be regarded as the fanciful embroidery of a people little skilled in shipbuilding, but as the outcome of the practical observation, perhaps even the bitter experience, of shore-dwellers of the great girdle-tide. Besides the instances from Asia and America just quoted and some Semitic reports, there is also a fine myth of the Marquesans which describes

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the building of a big 'house', capable of floating, upon a mountain-top. We believe that hitherto this feature has not been adequately construed, but that it now finds its full explanation in the girdle-tide spreading under the lessening pull of the dying satellite. Moreover it localizes the settlements of the original tellers of the myths, some 20 to 30 degrees north or south of the equator.

The Voguls say that Num Tarem, the Holy Father, built an iron ship for them, with a roof of sevenfold sturgeon skin. Another version says that their forefathers saved themselves on a raft of birch-logs, a third flood myth mentions dugout canoes made of huge poplar trunks.

It would be tedious to mention all the dates by which a vessel had to be finished. They range from three days to thirty 'years', though surely not actual years. The figures are purely fanciful, of course, and are shorter or longer with the skill or clumsiness of the boatbuilders and with the supernatural help given to them.

And it would take too long to describe all the details of the various ark-building myths. A skeleton survey must suffice. Arks, that is, big vessels in which a number of people and a certain amount of their movable property were saved, are mentioned very rarely. Besides the deluge heroes mentioned in the above-quoted myths only Tum-bainot of the Masai seems to have built a genuine ark in the eastern hemisphere, and he must be reckoned to the Semitic deluge survivors. However, the Nama Hottentots tell of a 'swimming house'. In America, ark tales are told by the Tepanecas in Jalisco, Mexico, and the ancestral hero Tezpi of Michoacan saved his wife, children, and animals in a big vessel.

In most of the other flood myths the national crafts figure in the rescue of the ancestor. Primitive dugouts appear in the tales of Mexico, where Coxcox and his wife Xochiquetzal, or, according to another tale, Nata and

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Nena, use one made out of a cypress trunk Dumu, the heroine of the Lolos in Western China, is rescued in a dug-out Canoes are mentioned in this connection by the aborigines of the Andaman Islands, by the Australian aborigines, by almost all North American Indians, and by the Arawaks, Maipuré, Makusis, and Tamanacos of Northern South America In the Fiji Islands the gods Rokona and Rokola, famous boatbuilders, built two big double canoes In the New Hebrides the story is told of the powerful demigod Quat who built a mighty canoe out of the biggest tree he could find The Eskimos say that their ancestors saved themselves in kayaks Many Malay myths mention closed proas Some peoples call their shapeless boats 'boxes', for instance the Banars in Cambodia, the Samoans, the Wiyot Indians, and the Huichols of Northern Mexico

Those who either did not know how to build boats, or had no time to build them, used rafts so the Karens of Burma, the Maoris, many North American Indians, the Voguls, and others

Fanciful vessels often figure in deluge myths, evidently only popular nonsense introduced at a time when the serious background of the myth had been quite forgotten the Annamese ancestor saved himself in a tomtom, Trow, the ancestor of the Tringus Dyaks of Borneo, floated in a trough, the heroine of the Toradjas of Celebes even in a swill-trough, Rock of the Arapaho Indians made himself a boat of fungi and spiderwebs, the ancestor of the Ahoms in Burma used a gigantic gourd which had grown out of a magic seed, Nichant of the Gros Ventres used a buffalo-horn, the ancestors of the Chané of Bolivia were put into an earthenware pot, the Lithuanian survivors were saved in a nutshell this was from a nut which Pramzimas, the highest god, had eaten in heaven and had thrown down to give his 'children' a chance to escape

A Peruvian myth says that when the waters of the

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Deluge had subsided "five eggs" were discovered lying on the shoulder of a high mountain. This term is by no means fanciful, it is very apposite, for it refers not only to the fact that out of arks life was, so to speak, rehatched after the Great Flood, but also to their clumsy, round-bellied shape. The reporters are evidently inland highland dwellers who had no contact with the sea and hence no knowledge of ships. The first glimpse they had of the strange new objects was when they wandered through their devastated country after the great cataclysm which had washed up this fleet of arks. "Eggs" was the only name they could give, on the spur of the moment, to the *cogges* which had tumbled awkwardly on their sides. When they approached they saw that the name was well chosen, for these objects teemed with life. From one of the "eggs" the culture hero Paricaca issued.

This myth is by no means unique. In Vedic literature, for instance, we read that Prajāpati, "lord of creatures" and father of gods and men, emerged from a "golden egg" which had come into existence in the primeval waters.

Not without reluctance, we leave this chapter on Arks. The passage in Genesis has always captured our imagination, when we were young, at Sunday School it was a favourite text, and when we grew up and doubted, for lack of a plain mythological explanation, many of the obscure statements of the Bible, it remained one of the chief passages which we felt might be based upon fact. And, indeed, at the close of the Tertiary Aeon there tossed on the rolling waves of the Deluge many an ark, the cradle of a new race, there sailed through the wide span of the seven-coloured arch many little groups of men and women, 'guided' out of the dark, evil past into the bright, good future. We ourselves may be descended from one of those deluge heroes—unless our forefathers found refuge on some mountain peak or escaped in some other way.

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Neither the ark nor the mountain refuge was safe. Most of the vessels capsized in the turbulent waves, most of the hills proved to be too low—the unchained waters covered them—in certain districts ‘fifteen cubits and more’—or swept over them in their wild surge towards the poles. So much the more reason, therefore, to pronounce the one staunch keel which remained out of the whole fleet as specially protected by the deity to whom her master prayed, to regard those more fortunate in their choice of a hill as having been led thither by the guiding hand of a god.

The deluge tales are the reports of the survivors of the Great Flood caused by the breakdown of the Tertiary satellite, handed down through the ages as holy lore. From their tales we can determine whether those who escaped were shore-dwellers, to whom the sea was familiar, or landsmen, to whom the waters proved utterly terrifying. Any sailor will swear (or used to swear, anyhow, in the days when ships *were* ships) that on his vessel he feels safer than anywhere on terra firma. The antediluvian shore-dwellers seem to have been quite aware of the impending disaster and fully prepared for it. Some of them even built their arks on high ground so as not to have them dashed to pieces on the shore when the first huge breakers of the Deluge rushed inland. They waited for the waters to rise and carry their well-appointed vessels away. From various echoes which we find in a number of myths, the ark-

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builders were men who had been driven away from their original shore-settlements by the slowly spreading waters of the ebbing girdle-tide, and had moved far inland to prepare new vessels in place of their lost old ones, awaiting the further developments of the cosmic drama with comparative calmness. The ancestors of those who say that their forefathers found refuge on a mountain, on the other hand, must have been inland dwellers. They seem to have been more or less taken by surprise by the Deluge and to have instinctively sought the high places.

All these features are amply borne out by the various myths quoted in this book. Here we shall only give one report, a magnificent description of the various phases of the mad rush to safety. It was considered so important that we find it included twice in the Bible (II Samuel xxii and Psalm xviii).

A general report of the cataclysm (4) 'The sorrows of death compassed me, and the floods of ungodly men made me afraid' (5) 'The sorrows of hell compassed me about the snares of death prevented me' (7) 'Then the Earth shook and trembled, the foundations also of the hills moved and were shaken, because he was wroth' (8) 'There went up a smoke out of his nostrils, and fire out of his mouth devoured coals were kindled by it' (disintegration of the satellite) (9) 'He bowed the heavens also, and came down and darkness was under his feet' (10) 'And he rode upon a cherub, and did fly yea, he did fly upon the wings of the wind' (11) 'He made darkness his secret place [eclipses], his pavilion round about him were dark waters and thick clouds of the skies' (12) 'At the brightness that was before him [the sudden change in the phase of the satellite when leaving the Earth's shadow] his thick clouds passed, hail stones and coals of fire' (meteoric material) (13) 'The Lord also thundered in the heavens, and the Highest gave his voice, hail stones and coals of fire'

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(14) 'Yea, he sent out his arrows [rays], and scattered them [the clouds], and he shot out lightnings, and discomfited them'

Some details of the salvation of the hero (33) 'He maketh my feet like hinds' feet, and setteth me upon my high places' (36) 'Thou hast enlarged my steps under me, that my feet did not slip' (reference to the state of the ground owing to the rain-deluge?) (16) 'He drew me out of many waters' (19) 'He brought me forth also into a large place, he delivered me' (2) 'The Lord is my rock, and my fortress, and my deliverer the horn [mountain peak] of my salvation, and my high tower'

Fierce battles are fought for the possession of safe places (34) 'He teacheth my hands to war, so that a bow of steel is broken by mine arms' (37a) 'I have pursued mine enemies, and overtaken them' (38) 'I have wounded them that they were not able to rise they are fallen under my feet' (37b) 'neither did I turn again till they were consumed' (41) 'They cried, but there was none to save them'

The Deluge subsides (15) 'Then the channels of waters were seen, and the foundations of the world were discovered at thy rebuke, O Lord, at the blast of the breath of thy nostrils' (atmospheric wave of hot air)

The refugee becomes a deluge hero (43) 'Thou hast delivered me from the strivings of the people, and thou hast made me the head of the heathen a people whom I have not known shall serve me' (44) 'As soon as they hear of me, they shall obey me the strangers shall submit themselves unto me' (45) 'The strangers shall fade away, and be afraid out of their close places' (starve, and come frightened out of their caves?)

It is impossible to praise this splendid myth too highly. It has few equals in straightforwardness and graphic power.

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The mountain myths seem to be much more numerous than the ark myths, as is to be expected, since the tribes of land-dwellers must have far outnumbered those of the shore-dwellers. Moreover nearly all ark myths mention a mountain, for the voyagers, on landing at an 'island', often found that, as the water subsided, their ark remained high and dry on a mountain-top. Then their affection was turned from the now useless vessel to the peak—for had it not seemed that the whole Earth was lost, and had not their island grown into a vast expanse?

Perhaps that is why everywhere the mountain-tops are regarded as holy—as health-giving, that is, as life-preserving.

The Jews were a pastoral, a primitive agricultural people, and as such they had to keep to the plains and valleys, the drowsy shepherd and the husbandman stand in awe of the mountains. Nevertheless the ancestors of the Jews had descended to the plains from the high hills. We find a very great number of quotations in their sacred writings which reveal a deep and affectionate admiration for the mountain-tops. On them was to be found safety and peace, there dwelt their god. Their love for their mythical peak and their awe of hills in general was finally transferred to the insignificant but much more convenient Mount Zion. But behind it still looms large the Hill of Refuge. That is why the Jews called Zion their Mother, for to it they literally owed their existence. That is why it is written concerning it that 'In the last days the mountain of the Lord's house shall be established [past tense, prophetically changed into the future tense] in the top of the mountains, and shall be exalted above the hills, and all nations shall flow unto it' (Isaiah 11 2). Moreover the etymology of the name of Zion points away from the fortified hill of the Jebusites: it is usually derived from Hebrew words meaning 'to be dry' or 'to

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offer protection' or 'to set up high', each one of which is significant

The myths of Paradise¹ agree that this place was situated in the middle of the Earth, it was situated on a mountain and enclosed within a definite and well-guarded boundary, it was of stupendous size later the Hebrew 'Paradise Mountain' was synonymous with the Earth itself the Babylonians significantly called their Paradise the 'Mountain of all Lands', it was a locality reserved for God and for a race of chosen men, the Jewish 'Mountain of the Elohim' Paradise came to an end when a 'serpent' caused some mischief, only when this mischief has been undone shall man dwell in Paradise again

There is no reason to doubt any of these statements The Earth-wide Paradise Mountain and the Mountain of all Lands stand for the highest mountain refuges at the time of the Deluge, and these became, after the falling of the waters, really the 'centres' of all the districts or lands (determined by the cardinal points) of the then known Earth The refuge which the Bible story mentions was settled by a race of superior people of high horticultural abilities, deluge survivors who soon put a certain area under cultivation When other survivors of different and inferior race were attracted to the fertile enclosure they were willingly permitted to share its plentiful products Apparently, however, part of the estate belonging to the ancient headman of the tribe was declared to be strictly private Nevertheless some trespassing and thieving oc-

¹'Paradise' is derived from Greek *paradeisos*, a park, in Avestan we find the more ancient rare form *pairidaēza*, an enclosure, an estate, a wall or rampart built round something, a place thus walled round The Hebrew *pardes*, a park or grove, is derived from this ancient Aryan compound word, thus probably showing that a certain part of the myth was originally non-Semitic, but appropriated by a Hebrew historian to round off his account of the prehistoric doings of his own people

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curied, and eventually the race of the 'heaven sons' drove out the race of the 'earth men' by force. For a while they wandered in the wildernesses of thorns and thistles till they found a place suitable for settlement towards the east of the great enclosure. There they began to imitate their former hosts, keeping cattle and tilling the ground, they also discovered how to work in metals, and eventually became accomplished in all the arts.

The mischief done by the serpent is probably the climatic breakdown at the capture of the present Moon, Luna. Only after this lunar period has ended will 'Paradise' again be possible, on the refuges of that age.

On the mountains of refuge the arch-fathers settled, near the altar or fane raised to the guiding god. From them descended, in the literal sense of the word, their offspring. So there grew up a settlement round the ancestral compound, and the 'world' was peopled again. A considerable time must have elapsed before the scouts of the settlement met with the descendants of other survivors. Until this happened, as the Bible says, 'the whole world was of one language and of one speech'.

The descendants of the deluge heroes probably kept to the sacred hill for several generations, to be safe from any unforeseen repetition of the great cataclysm. The tales of their forefathers, certain aspects of the country, and the frequent uneasy heaving of the Earth whose crust was still seeking for its equilibrium, kept the memory of the Great Flood in mind. But the waters never appeared again. The face of the new, young Earth grew more and more beautiful and became covered with sweet herbs, while the trees were heavy with clustered fruit. As generation followed generation the settlements in the pleasant valleys and fertile plains became more and more numerous and permanent. At last the safe but uncomfortable mountain-top was abandoned completely, left to their god and to their

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dead forefathers who shared his divinity, and whose divinity they had once hoped to share. Perhaps the peak disappeared in the clouds, the heavens rested once more on the broad-based hills. And their fathers were in heaven, watching over their children that all should go well with them. Now the wide vault would surely never rend again!

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When the ancestral mountain was abandoned the descendants had lost a convenient rallying ground, where their affections were fixed, which could be seen from afar, and by which they could take their bearings when exploring unknown territory. In order to return to their settlement in the plains without getting lost in the vast wilderness, they either tried to build it on some natural eminence, or they decided to build an artificial hill. To either they transferred their awe and veneration, and assigned its top to their deities.

'Let us build a tower,' said they, 'a tower of great height, lest we be scattered abroad upon the face of the whole Earth.' Such a 'tower', being an idealized mountain, copies its form from its natural prototype. The most striking mountains are those which stand out boldly from among their neighbours—cone-shaped, pyramidal peaks. Mention of such an early 'tower' should, therefore, by no means suggest the forms of architecture which are familiar to us, a castle keep, an observation tower, or a church steeple—though they *are* direct descendants of the artificial hill, rather we should think of the tower as having the form of a mound, or *ziggurat*, or step pyramid, often with an altar on top.

However, according to the myth preserved in the Bible, this tower of theirs was never finished and they were 'scattered abroad from thence upon the face of all the Earth and they left off to build the city'. The reason given is that

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then language was 'confounded', a thoroughly unsatisfactory explanation, for though a god may be able to strike an individual dumb—and that only as long as there is no medical knowledge explaining the case differently—it is utterly beyond him to tamper with a nation's speech. The only interpretation which would justify the passage is, that the building of the conspicuous new landmark attracted a troop of scouting postdiluvians of other 'descent' and other tongue. It was the clash of interests, and not the jarring of idioms, that caused the abandonment of the site. Anyhow, whatever else Genesis xi 1-9 may tell us, we learn that one of the first acts of settlement was the building of a sacred tower.

The Bible story is only the report of one wave of emigrants down from the mountain refuge, as is specially stressed by the passage describing their movements. 'And it came to pass, as they journeyed from the east [the mountainous region], that they found a plain in the land of Shinar, and they dwelt there.' Moreover the Jewish report is not the only one that has come down to us: it is really the most colourless of a great group of tower-building myths, and has probably been chosen by the editor of Genesis, who may have had a hand in divesting it of any early splendour that still clung to it, for its evident tendency unless the Lord rear the *ziggurat*, the builders' toil is in vain. There is a certain note of arrogance in Genesis xi 1-9 which may have enraged the god who confounded the language, but the real reason for his jealousy is hidden.

The Biblical tower myth becomes clear, however, if we regard the tower as what it really was—as a model of the mountain which safeguarded the ancestors, a model which, to a certain extent practically, but chiefly magically, was in its turn to save the sons from the Deluge for this was the punishment for the wicked. The 'wicked' wanted to escape this punishment—hence the divine anger. And

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hence a certain amount of divine fear for apparently the tower builders had other thoughts in their minds as well, and if their plans were not nipped in the bud 'nothing will be restrained from them, which they have imagined to do', as the Lord said when he came down one day to have a look at the city and the tower which the 'children of men', a tribe of different race from the one that he favoured, were building

What they had set themselves to do becomes immediately evident, and, indeed, light is shed upon the whole problem of the Biblical tower myth, if we take other Jewish myths into consideration. In so doing we get a glimpse of the glories of a little-known chapter of Jewish sacred lore—and further insight into the mettle of the deluge heroes and their descendants!

One of these myths (in the most get-at-able form edited by Josippon Micha bin-Gorion, *Sagen der Juden*, Volume 1) illustrates the memory of repeated deluges and the necessity of propping the unstable firmament to prevent further cataclysms. 'The people of that time said: "We know that in each acon [literally once every 1656 years] the vault of heaven breaks to pieces. Let therefore strong pillars be built as supports: one in the north, one in the south, and one in the west. This tower, here, shall be the prop in the east."'

The chief points in this story are the plurality of towers (which, of course, is only to be expected) and, above all, their use as supports. The idea of propping the firmament is common to the deluge myths of many entirely unrelated peoples. In a Chinese tale the monster Kung-Kung, of dragon shape, knocks with its misshapen head against one of the pillars of heaven and breaks it, whereupon a deluge comes over the land. South American Indians say that the Great Flood was caused by the World Tree—a kind of tent-pole—being chopped down. Atlas bears the broad vault on his shoulders (Hesiod) or guards the pillars which support

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the firmament (Homer) Quetzalcoatl, the great Toltec-Aztec god, is often described as supporting the skies with his shoulders and hands. Sometimes, however, as in the Mexican manuscript Codex Borgia, four gods are pictured as caryatid-like bearers of the vault of heaven. Quetzalcoatl occupying the favoured position in the east, Tlauizcalpantecutli standing in the west, Mictlantecutli in the north, and Huitzilopochtli in the south. The Teutonic Iminsul, the centre of worship of the continental Saxons, was a sacred wooden pillar of great height, reared to represent the world-sustaining ash Yggdrasill. The 'Younger Edda', however, relates that when Odin, Vili, and Ve had fashioned the vault of heaven out of the skull of Ymir they set it up on four horns and put a cunning dwarf under each horn to watch it. When the four posts, upon which the Eskimo firmament rests, begin to rot and threaten to collapse, the angekok—medicine-men, wizards—erect new ones in their stead. Tane of the Maoris sees to it that the heavens always stay on their four pillars. The sky of the Egyptians was an iron roof, supported by four pillars at the cardinal points, or the belly of the cosmic cow Hathor, whose four legs stood firm upon the Earth, or the body of the goddess Nut whom her father Shu held apart from her brother and husband Keb, the Earth, by means of a system of pillars, or, according to another version, a ladder. Esagil, the great Babylonian temple of Marduk—the dragon-killer—was known as 'the lofty house', and as 'the house of the foundations of the heavens and the Earth'. Its substructure, the Babylonians boasted, was built broad upon the threshold of the nether world, its top reached the vault of heaven. The number of pillars is generally limited to four, the natural cardinal points, or to one, the centre pole of the heavenly canopy. The idea of the firmament requiring propping and the props needing supervision is a very general one, and shows that man everywhere did his best

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to prevent another cosmic cataclysm This prevention was chiefly magical, of course, for usually the things against which one guards oneself do not happen

Another Jewish myth says 'The people of those days said "Let us build a tower that reaches from Earth up to the firmament, and let us sit in it like the angels of the Lord And then let us take axes and hew holes into the vault of heaven that the waters which are above may flow off and mingle with those that are below, lest we suffer again like the men who lived at the time of the deluge"'

This myth introduces quite a new element, of charming originality and real importance The Deluge, caused by the opening of the windows of heaven (which was supposed to be a kind of huge water-tank), was over But this calm was not to be trusted Perhaps, even while they were enjoying the pleasures of the young Earth, the great reservoir was being filled up again! A child who has come near to drowning dreads the water Hence the preventive measures taken to drain the accumulation of waters above the firmament, to spoil the plans of the god who was preparing another deluge

Such an attempt was bound to evoke the opposition, the 'jealousy', of the god whose plans were thus thwarted Therefore the builders had to be on their guard They were determined to carry out their work undisturbed And so we read in another myth 'And while they were building they discharged volleys of arrows against heaven When they fell down again they were found to be stained with gore Seeing this, they said to one another "Now we have killed all that lived up there"'

An eye for an eye, a tooth for a tooth, a cloud of arrows for any opposition to the building of a *ziggurat*! These were men who questioned the justness of the unfathomable decrees of the god or gods who controlled the cosmic phenomena Truly, an heroic age!

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They had a new deity in whom they trusted and who would defend them against him above. Therefore they said 'Let us put an image of our god on the top of the tower we have builded. In its hand it shall hold a sword as if ready to fight with him up there.' But, the myth goes on, 'they also wanted to use their tower as the base of operations for an attempt to storm heaven.'

'“Let us build a tower,” the men of that time said,’ another Jewish myth tells us, ‘“a tower high enough to withstand the onrush of the waters, and strong enough to resist the fire. And in the tower let us put engines automatically discharging projectiles that kill anybody approaching to take our stronghold by storm. On the tower shall be a winged image, and its wings shall protect our town, that neither fire-rain [the ‘wings’ were probably a kind of roof-like arrangement] nor water-flood may overwhelm it.”’ The myth ends with the gloss ‘But all this they did only from fear of another deluge.’

Robot guns with automatic range-finders and aim-indicators to be used against the god armed with thunderbolts—even if this is only a ‘myth’ in the ordinary sense of the word, an idle wonder-tale, it is unique!

Josephus writes in his *Antiquities* of Nebrod, the grandson of Chamas ‘He wanted to revenge himself on God for the destruction of his ancestors, thus he would build a tower so high that the waters of another flood, with which the world might be afflicted, would not be able to submerge it.’

From these myths there breathes the indomitable courage, the bold, keen spirit, of men who were thoroughly conscious of their accomplishments. Their towers were the buildings of heaven-storming Titans, attempting an offensive at great odds, and a hopeless one. For their fight was not with persons, but with the impersonal cosmic powers. With them it was, and is, and ever will be, hopeless to contend.

Where are the mighty *ziggurats* they piled out of sun-

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baked bricks' 'The Earth opened her mouth', one of the Jewish myths tells us, 'and swallowed a third of the tower. Fire fell from heaven and destroyed another third. The last third is still left.' But even this is buried by the sands of the desert.

The towers were built at a time when the Earth's crust was not yet as settled as it is now. Chasms must often have yawned, and earthquakes have shaken large areas. And the lightnings often struck the high towers putting up in the plains. Thus they were levelled again.

The pyramid of Cholula in Mexico, which was built as a thankoffering to the water-god Tlaloc, who had saved seven brothers of the giant race from the Deluge, was destroyed by fire falling from heaven, which killed many of the builders. The gods, we are told, were afraid of an invasion of their realm.

The destruction or inefficiency of pyramids or other artificial hills is the subject of many myths. The Washoan Indians of California tell the following story. The Washoans were not always the free people they are now. In the days of old, foreign invaders conquered them and made them their slaves. The Great Spirit sent a huge tidal wave from the sea which drowned most men. Then the slaves had to pile up a great temple in which their lords could take refuge if another tidal wave came. At the top of the temple (which is thus revealed to us as a pyramid) an ever-burning fire was tended. Once an earthquake announced some terrestrial revolution. The rulers took refuge in the temple, but during a great cataclysm the temple was submerged. Only its roof was still above the waves. There the survivors gathered, but the Great Spirit was wroth with them, and he flung them far away, as if they had been but pebbles.

The Papagos of California say that the divinity 'Montezuma' (literally he who shakes his spear against the

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heavens), who had escaped the Great Flood in an ark, had differences with the Great Spirit To spite him, Montezuma built a house which was to reach up to heaven It was almost finished when the Great Spirit sent his thunders to destroy the High House The myth also relates that the Great Spirit, to punish Montezuma, 'took the Sun with him into heaven' As this term is also used to describe a solar eclipse, we shall probably not go far wrong if we regard this eclipse as the first ever caused by the newly captured satellite Luna, and the destruction of Montezuma's pyramid as brought about by the cataclysm which attended the capture

We have shown the connection between the building of the towers and the Great Flood, a connection which is stressed by the myths themselves, whether they come from the eastern hemisphere or from the western But we do not want any misunderstanding to arise as to the age of the *ziggurat* of Birs-Nimrud, or of the Cholula pyramid, or of any other building, now in existence, which may be classed under the tower heading The myths are older than those buildings, they have weathered the ages and have remained sharp-cut and clear, while the originals of their themes have long crumbled to dust Nevertheless the pyramids jut out into our world from the days before the dawn of history, and are surely direct descendants of the artificial hills which the generations succeeding the deluge heroes raised as memorials and as asylums

The artificial holy mountains, the pyramids, or *ziggurats*, or step-towers, gained new significance for the plain-dwellers some twenty or twenty-five thousand years ago, when Luna's gravitational forces first began to play upon the Earth for a short time at certain conjunctions, as yet separated by long spells of time It was then that old decayed towers were reconditioned (the Birs-Nimrud tower is professedly a restored building) and new artificial

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hills were built. They served for the observation of the stars in general, and of the planet Luna in particular, and offered protection at the time of the conjunction inundations. Is this the reason why so many Mesopotamian *ziggurats* are dedicated to the Moon-god?

However, when, some 13,500 years ago, Luna was finally captured, the towers were of little use. And yet the generations that survived the capture built pyramids and *ziggurats*, once again.

It is possible that some of the *ziggurats* of Southern Mesopotamia, that of Ur of the Chaldees, perhaps, and that of Eridu and a few others (Babylon was certainly never reached by the waters of the Indian Ocean which rushed up the valleys of the rivers Euphrates and Tigris after having formed the Persian Gulf), were never covered by the waters, or, if they were, were too strong to be destroyed by the flood, and too tall to be buried under the layer of clay which the waters left after their retreat to their present level. The survivors of the great inundation could not find the mud-buried ruins of their low-lying cities, but they hailed their high-built, unscathed *ziggurats* with joy, and built up new settlements around them.

It would be most interesting to discover if the foundations of the *ziggurat* of Ur, for instance, are in an antediluvian or in a postdiluvian level, since the Babylonians boasted that their Marduk temple was based upon the 'nether world'. It would also be worth while to find out how far north the diluvian clay layer discovered at U₁ extends.

Pyramid building presupposes an architectural tradition of long standing. That is why only peoples of the highest culture have built them: the Egyptians, the Babylonians, the Mexicans. But the steeples of churches, pagodas, and temples are reminiscent, and so are cairns,

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tumuli, and mounds The Egyptian obelisks seem to have been reared, originally, to wain heaven against coming too near the Earth With the fading of a time of cosmic stress the myths became mere tales of marvels, and the pyramids, from being artificial or magical hills of refuge, became merely forms of a dead architecture, up the slopes of which a fellah now pulls you for a few piastres

Myths of the Creation of the Earth

In all deluge myths, whether of the eastern or the western hemisphere, whether told by peoples living near the poles or by tribes settling in the tropics, one fact always stands out: the Great Flood appears as the conclusion of a universal catastrophe, as the finale of a great cosmic drama. But, though it definitely closes a period, it does not cause the final *end* of things. After the Deluge comes the Creation.

It is a remarkable fact that the mythologist, though he knows an immense number of creation myths, cannot point to a single one whose report starts right at the beginning of things. In real myths creation out of nothing is nowhere thought of, almost everywhere we find the ordering of a chaotic muddle of pre-existing things, a formation or a re-formation on an improved plan, a re-creation rather than a creation in the primary sense of the word.

We may divide the creation myths into three main classes, namely those which tell of

- 1 The fashioning of the Earth out of some vanquished monster's body,
- 2 The fishing of the Earth out of the sea, and
- 3 The creation of the Earth through the word of a demiurge.

The first way is by far the most 'mythological', necessitating powerful supernatural intervention and determination, the second way is much more 'natural', and really only describes a certain aspect of the Great Flood. Both are

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well observed, the only difference being the position of the observer and his manner of interpretation. Both are confirmed by the teachings of the Cosmic Ice Theory regarding the breakdown of satellites. The third is the 'spiritual' way, the highest — from the standpoint of religion, mythology finds rather little of interest in it.

1 The Fashioning of the Earth out of some Vanquished Monster's Body

Let us first look at a number of myths which tell of the slaying of some terrible primeval monster, out of whose body its vanquisher shaped the new Earth. Such myths are not peculiar to any people, but they seem to presuppose both a higher reasoning capacity and a livelier imagination.

The classical example is the marvellous Babylonian myth of Marduk's fight with the dragon-monster *Tiāmat*, as related on the tablets of Assurbanipal's library. Originally that female monster seems to have been a very trustworthy being, so much so that even the 'tables of destiny', according to which the Earth and the heavens were ruled, were entrusted to her keeping. She misused her power, however, and carried on war against the whole world, aided by a crew of monsters of her own creation. The gods, meeting in council, decided upon her destruction. None of the more important gods was able to overcome her, but finally, after a fearful battle, the divine hero Marduk, the youngest of the gods, killed her. He entangled her in the meshes of a net, forced her jaws open, and filled her with a hurricane which destroyed her bowels. The prize of Marduk's deed was supremacy in heaven and Earth. To obtain the visible symbol of power and rule he wrenched the 'tables of destiny' from *Tiāmat*'s carcass and fastened them on his own breast. Then he hewed her vast

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body in two and formed the Earth out of one half and the heavens out of the other

Berosus, a Babylonian priest living about 250 B C, is one of our chief authorities on the cosmology of the Babylonians. His works are lost, but we find extracts in the writings of Eusebius, who in his turn quotes from 'one of the books without number' of Alexander Cornelius, surnamed Polyhistor. Alexander was, as far as we can judge, the careful, unbiased transmitter of much Semitic lore from the works, now lost, of forgotten authors, but the Christian bishop cannot refrain from repeatedly and tendentiously urging the impossibility and childishness of the Babylonian creation story. Therefore the third-hand form which has come down to us is very corrupt. Nevertheless we can learn from it that 'In the early days, before the Earth was yet made, a number of terrible beasts were the masters of the heavens. Over them ruled a female monster named 'Om'orqa, which is in Chaldaean *Thamte* or in Greek *thalassa*, whose name has the same numerical value as *selēnē*. To end this unbearable state of things the Lord Marduk rose and split the monster right through, making the Earth out of one half and the heavens out of the other, he also killed all the crew of terrible monsters that attended her.'

Berosus, with great openheartedness, assures us that this myth need only be valued as an allegorical description of physical events.

The equation 'Om'orqa = Thamte, that is, Tīāmat = thalassa, or sea, and the fact that the numerical value of the monster's name is equal to that of *selēnē*, or Moon, are most significant. 'Om'orqa means, in Aramaic, 'Mother of the Depths', and Armenian tradition—Eusebius's *Chronikon* has come down to us in an Armenian translation—calls her 'Mother of the Underworld'. The word 'Orcus' is significantly assonant, and probably cognate. 'Om'orqa was the dying Tertiary satellite, she was

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also the deluge reservoir which was ready to flood the world, she was furthermore the personification of the chthonic forces which as yet slept, but were eager to be released

The fashioning of the Earth out of a primeval serpent's carcass seems to have been a general myth of the primitive Semitic peoples. As such it should be the original form of the creation story of the Jews. The opening verses of Genesis would seem to contradict this. But we must not forget that the report in Genesis has only come down to us in its sublimated—and therefore, from the mythologist's standpoint, very unoriginal, not to say corrupted—form. Nevertheless, if we listen carefully to the Hebrew wording of the first verses of Genesis, we still find traces and echoes of the original meaning which no priestly editor has been able to extirpate.

'In the beginning', the Authorized Version translates, 'God created the heaven and the Earth. And the Earth was without form, and void, and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters.'

The literal translation, however, would read something like this: 'In the beginning Elohim [plural] created [*bārā*, etymological meaning cut out, forced into shape, the word contains the idea of violence] the heavens [plural] and the Earth. And the Earth was *tōhū* and *bōhū*, and darkness was on the surface of the *tehōm* and the spirit [wind, or fog] of Elohim brooding on the surface of the waters' (See also Genesis 1:6).

The most important idea which we can gather from this passage (from the Hebrew original, of course, much better than from our translation) is the equation 'the Earth was *tōhū* and *bōhū*' before it was carved into shape. It is absolutely necessary to note that here, both in English and in Hebrew, the word 'Earth' is taken in default of another

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word meaning 'pre-existing Earth-building material' (Compare Genesis 1 10)

We are further told that besides this Earth which was 'tōhū and bōhū' there was wind and water 'Thrice things,' says one of the Jewish myths in a striking parallel passage, 'three things existed before the world was created Water, and Wind, and Fire' The Phoenicians speak of *pneuma* (wind), *chaos* (water), and *mol* (primordial mud) as the pre-existing Earth-building materials

What wind and water are, needs no explanation But what is meant by the third of the raw materials of creation, which our text calls 'tōhū wā bōhū'? These two words have caused much trouble to all interpreters they are evidently archaic terms, for they are grammatically brittle and phonetically ruinous From an early time they have been thought to mean 'chaotic and void', but always with the reservation that this was only a makeshift, a guess, and not a literal translation

Professor Jeremias, the great German orientalist, fills these two word-runs with life when he says 'There can be no doubt that tōhū is connected with Tī(h)āmat, and bōhū with Behēmōt' With this we can make a big stride forward in the understanding of our creation myth

The equation 'tōhū = Tīāmat' requires an equation 'Elohim = Marduk', and also requires the fight of Elohim with Tōhū, and the fashioning of the Earth out of her body Genesis, however, is silent There is only a faint echo in the Hebrew word for 'created', and in the mention of repeated acts of division light from darkness, the waters above from the waters below, the waters from the dry land We are helped, however, by other passages 'By his knowledge', we read in Proverbs 3 20, 'the depths [tehomoth, Tīāmat] are broken up' Further, in Job xxvi 12 'He divideth the sea with his power' And in Psalm lxxiv 13, even more explicitly 'Thou didst divide the sea

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by thy strength thou brakest the heads of the dragons in the waters' Isaiah li 9 is still clearer on the subject 'Awake, awake, put on strength, O arm of the Lord, awake, as in the ancient days, in the generations of old Art thou not it that hath cut Rahab, and wounded the dragon?' Psalm lxxix 10 has 'Thou hast broken Rahab in pieces,' and significantly, in the following verse 'as for the world and the fulness thereof, thou hast founded them' The same theme, prophetically put into the future tense, we find in Isaiah xxvii 1 'In that day the Lord with his sore and great and strong sword shall punish leviathan the piercing serpent, even leviathan that crooked serpent, and he shall slay the dragon that is in the sea' In the Jewish myths we read concerning the dragons of the deep (the offspring of Tīāmat, so to speak) 'In the beginning Yahweh overpowered them in creating the world' According to the Book of Enoch, the time when leviathan and behemoth appear is indicative of the imminent end of the world In Ezekiel xxxii 3, there is an important parallel with the Babylonian myth in the passage 'I will spread out my net over thee', for Marduk, too, flung a net over Tīāmat Further parallels are the mention of horses and chariots and bow in Habakkuk iii 8-9, and in various passages, for instance Psalm lxviii 33, the mighty voice and great words of the Lord before going to battle

And so, though a complete version of Yahweh's dragon-fight has not come down to us in Jewish literature, we are able to gather from the above quotations that there was one widely known But, to stress it once more, any such myth was surely not an imitation of the Babylonian creation story but a parallel to it, perhaps derived from a common Semitic source

From a consideration of the above passages we may now put forward the following propositions The Hebrew word Tōhū, in its primary meaning, is, like the Babylonian

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Tiāmat, a cosmic monster, namely the dying Tertiary satellite, in its secondary meaning, Tōhū is congruent with the fuller Hebrew form tehōm, the primeval ocean, the watery chaos of the great girdle-tide, which is piled up high by the primary Tōhū, and is ready to flow off as the Deluge at her death. Tehōm occurs in Hebrew only without the article, a grammatical peculiarity otherwise only accorded to proper nouns. It is therefore to be valued as a mythological person. Bōhū is primarily the complement of Tōhū, just as Apsū in the Babylonian myth is the male counterpart of Tiāmat. It, too, is a cosmic monster of primeval days, Behēmōt, 'the chief of the ways of God', or, rather, 'that which was before the creation'. Bōhū seems to have ruled the antediluvian land (the 'desert', it was also an earthquake personification) just as Tōhū held sway over the antediluvian waters. 'Behēma', says the Cabbalist book *Sohar*, 'lieth upon a thousand mountains'. And the Jewish myths explain it as follows: 'Bōhū was an expanse of mud and stones through which water gurgled. Tōhū was a green belt which encircled the heavens and caused the darkness'. This definition of Tōhū is extremely helpful: it means nothing less than the ice-block ring formed by the breakdown of the satellite's glaciosphere. *Ice reflects green rays.* We are thus directly pointed to the satellitic cataclysm which preceded the 'creation', the dragon-fight which has been 'sublimed away'.

When Yahweh had killed the cosmic monster he set about building the Earth, his Earth, out of the mangled body. 'I will lay thy flesh upon the mountains,' he said, according to Ezekiel xxxii 5-8, 'and fill valleys with thy height. I will also water with thy blood the land—even to the mountains, and the rivers shall be full of thee. And when I shall put thee out, I will cover the heaven, and make the stars thereof dark, I will cover the sun with a cloud—and set darkness upon thy land.' The Deluge

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sunged over the Earth 'The waters stood above the mountains At thy rebuke they fled, at the voice of thy thunder [the uproar of the unchained elements] they hasted away ' (Psalm civ 6-7)

Terrific hailstorms swept over the globe, lashing the land and whipping the subsiding waters of the girdle-tide, out of which new land emerged A Jewish myth reports this stage as follows 'The Lord took a lump of snow [ice] from under his throne and threw it into the waters, and out of them rose the Earth ' A passage in the Slavonic Book of Enoch is exactly parallel 'Out of a lump of snow from the foot of the throne of glory the Earth was formed and the foundation stone of the world was laid upon the waters ' Metallo-mineral material now came down from the dying satellite, in blazing meteor swarms 'Burning coals went forth at his feet,' says Habakkuk iii 5, and a Jewish myth tells us 'He took snow and fire and rubbed them together, and thus created the world ' And in another myth we read 'The building [the newly formed Earth] was still quite wet, but fire fell from above and dried it ' An old Jew told me the following story, which he had heard in his youth from a religious instructor; unfortunately I have not been able to find the myth anywhere, nor did any of my Jewish friends seem to know it 'When the Earth was newly created it was quite wet, mud covered it and there were pools of water everywhere Then the Lord sent a legion of angels to dry it They brought live coals in baskets [braziers] and created such a draught with their wings that the soil was soon dry Where they dropped a glowing piece of coal, the mud baked into stony consistency, and thus rocks and stones came into being ' This is quite in keeping with what we read in various Jewish myths, in the Book of Enoch, and elsewhere, about the angels as personifications of wind and fire, who helped the Lord in creating the Earth

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The 'snow' mentioned in the above passages is really wreckage from the old, shattered firmament, which is professedly built of 'terrible' ice (Ezekiel 1 22, and various Jewish myths), *qerach*, *qora* ice, from *qar*, to be cold, the Authorized Version following LXX translates correctly crystal, giving it the Greek sense, we erroneously take it to mean quartz or some other glassy substance

The cherubim are generally described as winged beings. Their exact form, however, is left quite undetermined, it has been possible to develop them into human, or into animal shapes. Both forms are represented as many-winged to express the great vehemence with which they move. The cherubim are regarded as the bearers or companions of Yahweh's throne or chariot and the guardians of his abode. In I Samuel iv 4 and II Samuel vi 2 we find them in this capacity, but reduced to mere ornaments of an altar, they are also regarded as bull-like beings upon which Yahweh issues forth from his inaccessible fastness to interfere in human affairs. Psalm xviii 10. The cherubim are usually associated with storm-winds and represented as armed with fiery swords. These swords have been interpreted as lightnings, and so the cherubim have also been interpreted as storm-clouds. Genesis iii 24, Ezekiel 1 4 *et seq*. In mythology birds or flying beings are often made responsible for the winds. The Algonkians say that birds create the winds. The Sioux and other tribes say that thunder is the noise which the dark-fiery thunder-bird makes by flapping its wings. In early art the cherubim were painted with red, that is, fiery faces, even Chaucer still speaks of a 'fyr-red cherubinnes face'. On the other hand the name cherub, in Hebrew *kērūbh*, must be derived from Hebrew *qar*, cold, and connected with *qerach*, ice.

All these statements appear to be partly fantastic and

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partly irreconcilable Viewed from the standpoint of the Cosmic Ice Theory, however, they gain in meaning and are filled with significance

The 'cherubim' are the ice and ore blocks which rushed down upon the Earth towards the end of the Great Flood This explains their name—the 'Icy Ones'—their appearance—flying beings with fiery bodies and countenances flaming shooting stars—their connection with clouds and hurricanes, their position as guardians or companions of Yahweh's throne or temple—the Tertiary satellite—and the bull shape—a lunar symbol—which is attributed to them The true explanation of the cherubim is, therefore, that they were the breakdown products of the Tertiary satellite, ice and ore blocks It was only when this memory began to pale out that they were tamed into storm-clouds and lightnings, and finally groomed into angels of shining countenance, singing praises to the Lord all the day long

We can now make another attempt to render Genesis 1 1-2 in clearer language What is expressed by these two verses is something like this

'In the beginning of the present aeon the Elohim [or, rather, Yahweh, after the other Elohim had tried their prowess in vain Job xxxviii 4-7, Psalm lxxxix 7-13] conquered a primeval, bisexual chaos monster [*Tōhū wā Bōhū* in its primary meaning the doomed Tertiary satellite] In those days the Earth as we know it was not yet created, only a primeval ocean and a primeval land mass existed [*tōhū wā bōhū* in its secondary meaning] The *bōhū* land sank into the *tōhū* waters, when the Deluge came after the undoing of the *Tōhū wā Bōhū* dragon The breakdown products of the dying satellite spread a dense pall of darkness over the *tehom* [the tertiary meaning of *tōhū*, the diluvian and immediately postdiluvian forms of the *tōhū* waters] over which gales howled or fog brooded '

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How inadequate and yet we shall not be able to do without this faithful, careful version now that we have it. For it alone can help us to see the real splendour of the Biblical creation story.

To continue

Genesis 1 3-5 'And God said, Let there be light and God divided the light from the darkness And God called the light Day, and the darkness He called Night'

What is meant is after a time the thick cloud-cover came down in tremendous hailstorms and cloudbursts, and the difference between an unbroken light-time and an unbroken night-time became distinctly marked. In the period before the breakdown of the Tertiary satellite, the lighting effects had been peculiar: three total solar and three total satellitic eclipses every day, and the bright light of the satellite's sickle during the night so that it was never really 'day' and never exactly 'night'. With the advancing breakdown, the darkness had become more and more dense.

Verses 6-8 'And God said, Let there be a firmament in the midst of the waters, and let it divide the waters from the waters And God made the firmament, and divided the waters which were under the firmament from the waters which were above the firmament and called the firmament Heaven'

How this firmament was made and of what it was made we are not told, but we learn why it was built: to divide the waters above from those below. The old vault had broken down, and the ocean, which had been, according to old Jewish thought, above this tank-bottom, had descended in terrible cascades. To picture the watery chaos of the breakdown period is almost impossible. The falling core-material and the hail of undissolved ice-blocks were regarded as the debris of the broken ocean floor. Any creator who would not have his work undone by a repetition

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of such occurrences must, therefore, build a protecting cover or lid or dome. The material was quite logically taken from the vanquished monster, Ymir, Tīāmat, or, in our case, Tōhū. It had caused the demolition of the old vault, it was now used to furnish the material for the new one. With the help of the Babylonian parallel and the remnants of the dragon-conquest myth scattered in the literature of the Bible, we may now reconstruct verses 6-8 as follows: 'God heaved up [therefore 'heaven'] one half of the body of Tōhū, which he had split, and used it as a safeguard [is this the final sense of *rakīa*, firmament?] against any further cataracts of the waters of the ocean that is above.' It should be noted that *rakīa* also stands for the circle of twelve pillars upon which the vault of heaven itself rested—the zodiac.

Verses 9 and 10 in the Authorized Version read: 'And God said, Let the waters under the heaven be gathered together unto one place, and let the dry land appear: and it was so. And God called the dry land Earth, and the gathering together of the waters called he Seas.'

The passage to be expected here would read something like this (we are aided, especially, by Ezekiel xxxii 5-8): 'God made the new Earth out of the other half of the body of Tōhū which he had rent.' This idea is entirely eliminated in Genesis. But the statement contained in the above verses is quite correct and describes an actual stage in the development of things. The explanation in the light of the Cosmic Ice Theory would be: The rain-storms caused by the descent of the outer ice-ring came to an end, the waters ceased to oscillate between the equator and the poles, the seismic and volcanic phenomena quietened down, the last throes of the cataclysm ceased, the turbulent waters had found the place assigned to them under the new order of things, and land, the New Earth, rose out of the waves. The globe had attained its postdiluvian, prelunar

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aspect. Life, suppressed for ages, was free to leap up in a steep curve.

The vegetable kingdom was the first to take possession of the rich virgin soil. Of all living things plant seeds are the toughest. So we read in verse 11 'And God said, Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind.'

At last the clouds parted and revealed glimpses beyond the dense blanket which had hitherto enveloped the Earth. It had by degrees become more and more threadbare and had, at one stage, already revealed the absolute difference between light and darkness, day and night. Now the time had come for the 'creation' of the Sun and the Moon—our present Moon, included here by mistake, for the sake of *completeness*—and the stars. The appearance of light before the 'creation' of the Sun is quite natural, the reader will observe.

The 'creation' of fishes and birds comes next. The term 'creation' with reference to animate nature should be taken, in its most literal form, to mean the 'growing up', the teeming appearance of certain species. Now fishes and birds are not only very prolific, but also very quick breeders. They swarmed forth from their retreats and soon filled the waters of the seas and multiplied on the Earth.

The creation, or plentiful appearance, of land animals follows. Of these very much fewer had been able to escape, besides, they breed much more slowly. Between the final emergence of dry land and the formation of herds, flocks, or packs of animals by survivors, a considerable time, years probably, passed.

Last comes the creation of man. This will be discussed in a special chapter. Here we need only emphasize that 'creation' means 'first appearance' and that this appearance must be understood from the point of view of an observer. The deluge hero who observed the gradual development of

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things and passed on his knowledge to his descendants did not count himself or his family as 'men' They were 'sons of God', or the like But, at last, after the discovery of shoals of fish, flocks of birds, herds of animals a tribe of 'men' was sighted Man is an extremely slow breeder, and this explains his late appearance in Genesis

We have now reconstructed the lost sense of one of the most important passages in the Bible, and put it upon a new scientific basis Genesis 1, as it stands in the Holy Book, is a diagon myth without a diagon, a deluge myth without a deluge But who can say that these important parts were not known to the Jewish sages? The presence of a secret teaching concerning those things about which the Bible is silent is indicated by the injunction given in the Cabbala 'The creation lore is not to be taught to more than one disciple at one time' The inquisitive student even had to cover his face when explanations were given to him!

Genesis 1 is not religion, it has only been made to serve religious purposes Today it is generally thought to be the primitive idea of a primitive race about the creation of our Earth Yet it is science, knowledge in the best sense of the word, experience, not speculation We may safely start a geological textbook, a history of the world, with the monumental words 'In the beginning God'

The finest creation myth of the Aryan peoples is surely that contained in the Edda The primeval giant Ymir, who was formed of fire and water, waged war against all who were not of his race But the gods Odin, Vili, and Ve overcame the giant and flung his body into the vast chasm called Ginnungagap, which he had caused to form From his blood were created the sea and the waters, from his flesh the earth, from his bones the mountains, from his skull

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the sky, from his brain the clouds, and from his eyebrows Midgarth for the race of men

The Kabyles of North Africa say that the superman Athrajen slew the giant Ferrauin and pitched him into a lake called Thamguith. This caused its waters to overflow into the ocean, which rose and flooded the Earth. The seven primeval seas were originally formed from the blood which flowed from one of his wounds.

The Rig-Veda tells how the gods in their endeavour to free the world from chaos killed the primeval giant Purusha as a sacrifice. Out of his carcass the world was created.

According to a Chinese myth, the Earth with its different features was formed out of the various parts of the body of P'an-ku, the Pre-existing Being, millions of years ago.

In the cosmogony of the Manichaeans the Spirit of Life, the helper of the Primal Man, captured the evil, rebellious Archontes, or Rulers of the World, slayed them, and formed the firmament out of their skins.

The aborigines (Gilbert Islanders) of the Island of Nui, or Egg, belonging to the Ellice, or Lagoon, Archipelago in the Pacific Ocean, tell in one of their myths how the great Primeval Sea-Serpent was killed and hewn to pieces, out of which the neighbouring islands were made.

A Samoan myth points in the same direction. Tangaloa-Langi, the Heavenly One, the son of Rangi and Papa (Heaven and Earth) lived in an egg which he at last broke in pieces, or, according to another version, in a shell which he shed bit by bit. Out of the fragments the Samoan Islands were formed.

From the preceding paragraphs it will have become clear why in so many cosmogonies the Earth and the heavens are created out of the body of a cosmic monster. And in perusing this section the conviction will have grown in most readers that the creation myths must be

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less the result of deep speculation than of direct observation. They are, in fact, reports given by eyewitnesses. Of course, they have, in their passage from lip to lip for thousands of generations, become rounded off, reinterpreted, idealized. But their inherent truth has remained untouched in spite of any outward changes they may have undergone.

2 The Fishing of the Earth out of the Sea

The idea of creation seems originally to have been inseparably connected with the idea of physical labour. Indeed the very word 'to create' points in this direction, for the Latin *creare* and the Sanskrit *kr* mean 'to make'. The more heroic way of creating the world has already been described in the foregoing section: the fashioning of it by a demiurge out of a vanquished monster's body. There is a second class of creation myths, which also ascribe the creation of our world to physical labour, but to labour of a much more homely kind: the fishing of the Earth out of the sea into which it had been plunged. Compared with the first method, the second seems to lack something of the world-wide view of things, that is to say, myths of the second type refer to the creation of a much smaller, more 'local' world, and not to the whole Earth. We need not be surprised, therefore, if we find that the 'piscatorial' myths are themselves very localized. There are two distinct main groups.

The first group, the group of fishing-up myths proper, is that current among the inhabitants of the Pacific Islands. The second group, with its distinct magical re-creation element, is chiefly centred in North America.

The Maoris of New Zealand say that the demigod Maui pulled their island up from the bottom of the sea, for this reason it is also called 'the Fish of Maui'. The inhabitants

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of the Island of Aneiteum, one of the New Hebrides, assert that it was fished out of the ocean by their chief god. In the Tonga Archipelago we find the following myth. One day, when the god Tangaloa was fishing, his hook caught in the land beneath the sea. He hauled in carefully, hoping to get a whole continent up. But the line broke when only the tops of its mountains were above the waves, and these mountain-tops are the islands of the Tonga Archipelago. In Samoa, Tangaloa-Langi gave fish-hooks to the demi-god Seve and to a man called Pouniu. These they hooked into the submerged islands, and lifted them up so that they floated. The inhabitants of the Paumotu Islands or Low Archipelago say that their god Tekurai pulled the islands up out of the depths of the sea and then strewed them about like a sower. The Island of Mangareva, in the Gambier Group, was fished up by the divine hero Maui, and Manohiki was hauled up by a whole company of gods, each of whom was called Maui.

A myth of the natives of Niue (Niué-Fekai, or Savage Island) is slightly different. At the time when the Earth was lost in the waters, two men from Tonga-Tabu saved themselves by swimming. Suddenly they felt ground under their feet. They stamped on it, and the land rose out of the waters.

It is evident that all these myths are derived from some primitive original which was formulated at a time when the Pacific peoples who relate the myths were not distributed over so huge an area as now.

The fishing-out or drawing-up motif also occurs in Aryan myths, although very rarely. The old Irish believed that the Earth had been raised out of the waters. In one of the Eddic versions of the Creation, Odin, Vili, and Ve, after killing Ymir, raised the Earth out of the waters and so formed Midgath. The Greeks tell of Delos, the smallest of the Cyclades, being fished up from the deep by the

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udent of Poseidon In Indian mythology we read that, in the third or Varāha Avatara, Vishnu, in the shape of a fiery boar, lifted the Earth out of the throat of the Pātāla (Regions of Hell) into which it had been plunged by the terrible demon Golden-Eye, the daitya Hiranyāksha. Vishnu had to fight for a thousand years before he was able to slay the monster and to lift the Earth up again. The same is also told of Brahmā who, before he could start upon his work of creation, appeared in the shape of a huge hog and raised the Earth out of the waters with his tusks (Ramayana).

The fishing-out motif is almost entirely restricted to the eastern hemisphere. In the western half of the globe it is rare. However, the Bella-coola, or Bilqula, of British Columbia, say that the god Masmasalanich pulled the Earth out of the waters by means of a strong cable. To prevent it from being submerged again, he secured this cable to the Sun.

It is scarcely necessary to point out that the 'fishing out' only describes the rising of submerged land out of the waters of the second girdle-tide at the time of the Deluge.

The second main group is that which has its chief home in North America. Its most striking feature is the help of diving animals that fetch up mud from the lost Earth, out of which the god-hero magically re-creates firm land. In these myths we find a definite *Schoepfung*, a *Herausschoepfung*, a 'scooping out' from the waters of the primeval flood, as the German word for 'creation' implies. (Another derivation connects *Schoepfung* with 'shaping', 'kneading'.)

The diving animals are otter, beaver, duck, loon, muskrat, trying in different succession and with different success—but generally it is the hardy muskrat that succeeds in reaching the submerged Earth. Only in rare instances does a water animal, a tortoise or toad, or a fish procure

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the magical lump of mud. Usually the animal comes up dead or dying, but is restored to life by its sender and rewarded for its faithful services. The mud is collected out of the animal's claws, or mouth, or nose, and kneaded into a little ball or disk which is set upon the water, if sand-grains have been obtained they are dried and then blown over the water. Sometimes, however, the re-creator is conspicuously absent or, rather, the diving animal takes his place. Both mud-ball and sand-grains, when they touch the water, begin to grow into islands, which expand into continents, usually aided by the warm breath of the demiurge, a fact which is often expressly stated. Then whatever has been saved in the manitou's canoe is landed, or an entirely new creation takes place.

Going from north to south in North America, we find this myth among the following Indian tribes: Dogribs (N W Canada, hero-deity Chapewi or Etewekwi, successful diver muskrat), Hares (N W Canada, Kunyan, beaver), Montagnais (N E Quebec, the Old Man, duck), Cree (Manitoba, Saskatchewan, Keewatin, Wissakechak, muskrat), Muskwaki (Canada, wizards, muskrat), Hurons (Quebec, the Tortoise, toad), Ojibways (Lake Superior, Menabozhu, muskrat), Arapaho (Oklahoma, Nihancan, tortoise), Gros Ventres (Montana, Nichant, tortoise), Sacs and Foxes (Iowa, Oklahoma, Wisaka, muskrat), Maidu (California, World Creator, tortoise), Salina (California, the Eagle, king duck). And many more tribes have similar myths.

In South America this type of re-creation myth is very rare. Rather striking and typical examples are the tales of the Arc or Kuruton and the Cangang in Southern Brazil. At the time of the Great Flood the respective ancestors had taken refuge in the branches of lofty trees on the top of high mountains. There they stayed for days, despairing of ever seeing the Earth again. At last

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Sapacurus (ibises) and Saracuras (water hens) brought earth from afar and threw it into the waters. Then the firm land rose out of the waves. The Ges or Tupuya Indians of Eastern Brazil and Bolivia say that the survivors of the Great Flood had escaped to high peaks, which became little islands when everything was submerged. These insufficient islands were added to by Saracuras which fetched earth from afar. Thus the area of safety was enlarged and the whole continent formed at last.

The Iroquois, one of the many North American tribes having the same myth, say that in the beginning only the back of a tortoise was visible above the water. Various diving animals, however, brought mud which they added to the tortoise-island, and so increased its area.

The ibis is the re-creator of the Earth with the Caribs, the ancient aborigines of the Antilles. It scooped up so much mud with its beak that hills could be formed from the heap.

With the Taculies of British Columbia, too, an animal alone re-creates firm land. In the beginning nothing existed but a universal waste of waters and a muskrat. The latter, seeking its food at the bottom of the sea, frequently got its mouth full of mud. This it kept spitting out and so formed an island, which in due time developed into the Earth as we know it.

The Iroquois in Alberta say, in another myth, that when the original ancestress fell from heaven into the waste of primeval waters dry land suddenly formed under her and quickly grew to the dimensions of a continent. Other myths of theirs have already been quoted.

The Athapascans (N W Canada and Alaska) say that the Earth rose out of the waters when Yeti, the fiery-eyed thunder-bird, flew down from heaven.

The Muskogean tribes of the Creeks and Choctaws in

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Oklahoma have the following creation myth The two original doves flew over the vast expanse of the primeval waters without finding a place to alight At last they saw a single blade of grass appear above the surface of the sea Then the Great Hill, Nunc Chaha, upon which it grew, sprang up, then the solid earth at the base of the hill, and gradually the whole terrestrial surface emerged and took its present shape

The Mundiuku tribe of the Tupi-Guarani family of Brazilian Indians do not know of an animal helper They believe that the god Raini formed the world by placing a big flat stone upon the head of a water-god Then the hero Karu blew some feathers about, and when they fell they turned into mountains (the meaning is, that the mountains lost their cloud-caps and became visible)

The Shans of Burma say that white ants brought up the Earth from enormous depths, where it had been put by nine spirits At first a high central mountain appeared, and then seven smaller ones grouped round it

The magical coercion motif is as typical for America as the fishing-out motif for the opposite hemisphere But, just as we found a singular exception to the latter, so now to the former It is the well-known myth preserved in the Tale of the Argonauts of the creation of the island of Kalliste (Thera, the modern Santorin) out of a clod of earth which the hero Euphemos obtained from his half-brother, Triton When it was thrown into the yeasty waves it grew into an island, which was peopled by its creator and his descendants An echo may be heard in the Greek myth of Asteria This daughter of a Titan and mother of Hecate, in order to escape the embraces of Zeus, threw herself down from heaven into the sea, where she was metamorphosed into the island of Asteria, 'the island which had fallen from heaven like a star'

The re-creation of the Earth out of a small quantity of

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mud is based on the magical hypothesis that if you have part you have the whole. At the time of the sinking of the waters it must have been quite easy for a deluge hero to make himself a name as an Earth creator.

3 The Creation of the Earth through the Word of a Demiurge

We also find a third class of creation stories, and this is the highest—neither the shaping of the Earth out of a cosmic monster's carcass, nor the physical labour of raising up the firm land out of the waters, nor the magical re-creation of a lost Earth by means of a small part of it, but the *will* of a supreme being is alone necessary to make the land appear *ex nihilo*.

Yet, while myths of this class are surely the highest and the least offensive to a delicate religious feeling—although a theory of Creation, it would seem, is not an indispensable part of a religious system—they are also the most artificial and therefore the most impossible from a mythological point of view. They are myths only in the colloquial sense of the word, that is, purely fictitious narratives. Indeed, they are, almost exclusively, late priestly speculations and therefore do not naturally fall within the limits of our subject. Will is only a fiction—invented to make life more worth living in this world of hard facts and stern necessities. Will has indeed become a great moving factor in this world—yet what is will if the hand be idle? But, of course, if I will that which is inevitable, the inevitable can never disappoint my will. From this point of view the will-myths may be included among the creation myths which gain in meaning when tackled with the tools of the Cosmic Ice Theory.

The grandest of these myths is, of course, the one with which the Bible opens. Let the dry land appear! In Hindu,

The Word of a Demiurge

Chinese, and Iranian mythology we find lofty thoughts of the same kind. In the rest of the world, however, the will-myths are of necessity rather rare.

The Maidu Indians have a myth which says that at first there was nothing but the waste of waters, upon which Kodoyanpe, a beneficent being, and Coyote, a Mephistophelian character generally bent upon changing things into their opposites, were drifting in a canoe. 'Let the surf become sand!' cried Coyote—and it was so!

In the sacred traditions of the Quiché, the Popol-Vuh, the creation story is told as follows. The Mams, the creator gods, assembled at the time when the surface of the world was still below the primeval waters. They deliberated what to do. At last they decided to call the Earth 'Earth!' they shouted, and the Earth rose out of the waters.

The Gros Ventre Indians of Montana have a myth according to which the Earth was created through the agency both of magic and of will. Out of mud brought up from the bottom of the waste of waters, from the surface of the Lost Earth, the god Nichant fashioned an area just big enough for him to stand on. He stepped on it, closed his eyes, and said 'Let there be land as far as my eyes can see!' And when he opened his eyes again all about him was land.

From the foregoing paragraphs it will have become evident that the creation myths are inseparably connected with tales of deluge and destruction, and with the belief that all life rose out of the waters. We have also found—and this is a conclusion of the greatest importance—that the cosmogonies which have come down to us, no matter from which part of the Earth, as long as they have remained, as far as possible, intact, are not the outcome of the curiosity of man concerning the origin of the world around him and the manner and order in which the various

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forms of life came into being, that they are not the spontaneous or laboured productions of folk-fancy, that they are not primarily teleological speculations but that they are sober reports of eyewitnesses put into a peculiar literary form—revolutionary though such a conclusion may be.

The Literature of the Bible

The literature of the Bible presents a special problem to the mythologist. The Bible is a unique Book consisting of various matter from various ages and various nations in various stages of their development. It represents a fair though entirely arbitrary selection of writings which are neither historical nor mythological in any strict sense. The Jewish religious beliefs have gone through a very peculiar process of sublimation in the course of which a divine glamour was thrown over all the 'hard facts', till faith developed out of a religion of experience a religion of revelation. This necessitated frequent re-editing of the holy traditions, in which it was the great endeavour of the editors to clear away early, crude traits; and, as a result, the foundations of the Jewish religion have come down to us in an entirely corrupted form. We cannot deny that this very form, with its emphasis on the moral grandeur of the World-Shaper and World-Keeper, made it easy for the Jewish religion, in its Christian interpretation, to conquer the world. It might be inconvenient for the theologian, if he were obliged to describe his God as a dragon-slayer (to mention only one of the more striking attributes of god-head), but the mythologist feels that he has been deprived of valuable material, and for him Yahweh is a serpent-killer after all, a Jewish Marduk, and this fact, though carefully expurgated or idealized in Genesis 1, appears in its original simplicity in Isaiah xxvii.

The sublimation of the Jewish world-picture was the

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consequence of a slow natural growth, not of a sudden dictatorial act. So the mythologist, if he is willing to dig, may still come upon fragments of true myths of undoubted originality and antiquity. With these it is as with the rough brownish lump of amber that the child's spade may throw up on the Baltic coast: if treated with a skilful hand it will show the delicate insect hovering in its golden crystal prison. And in our mind's eye we view the world as it was at that remote age when the little animal perished on a tear of resin.

Myths are fossil religion. They are not the work of imagination, but the result of interpreted observation. In them a great store of ancient and direct experience is laid up. And behind this fossil faith there is fossil history: actual happenings which lie far beyond the scope of history proper. Generally, of course, they are clumsily and quaintly described, but always with simplicity and candour, and the reports are almost without exception literally true.

The most interesting passages in Biblical literature, from the standpoint of the mythologist, are the scanty, but significant, apocalyptic fragments. In addition to the great Apocalypse itself, we find important passages in Isaiah (especially chapters xxiv-xxvii), Ezekiel (especially chapters i and x), Daniel (ii 31-35, vii 1-14, viii 1-14), while references and allusions are scattered through the whole Bible. The primeval Serpent or Dragon appears again and again, and so do the mythical monsters—behēmōth, tehōmōth, leviathan, seraphim, cherubim, also fire-rain, earthquake catastrophes, the Flood, the mountain of God, the garden of Eden, and so on.

It is as peculiar as it is evident that the apocalyptic fragments are practically foreign to their context. There is something in them of the nature of quotations. The appearance in Biblical literature of apocalyptic matter is a very late phenomenon, hardly to be observed before about

The Literature of the Bible

200 B.C. In the following century there appeared the classical apocalyptic passages referred to above, whose chief feature is their sombre grandeur and the absence of confused and fantastic imagery. In the first century B.C. and in the first century of our era, however, the writing of apocalyptic became a fashion, and dozens of obscure authors tried to outdo one another with unintelligible messages. It is lucky that none of these feverish apocalypses is in the canon. They have caused enough harm outside it.

Where the original apocalyptic matter came from, is an open question. It may be out of Jewish folklore, into which the original traditional views on world-making and world-destruction had been relegated as the higher form of religion grew. On the other hand the appearance of apocalyptic after the Exile may mean that the writers drew from ancient sources which are unknown to us, but which point to the more remote east. The other religions of antiquity had not undergone so much alteration as the Jewish; consequently their teachings seemed, on closer acquaintance, to be full of hidden knowledge. Therefore we do not go very far wrong if we say that the Jewish apocalypticists based their work upon a treasure of primitive cosmological and mythological traditions which had, more or less suddenly come to light in later post-exilic times. If this is really so, they have saved us fragments out of some great store of ancient myths which must otherwise have entirely perished.

Apocalyptic proper, therefore, is ancient esoteric knowledge about a terrible destruction of the world in a great cataclysm. The latter was caused, either by a dragon that was eventually slain by a godhead, or by a godhead itself—in a 'day of Yahweh'. Apocalyptic proper ends in softer strains, with the coming of a new order of things, a new heaven and a new Earth. Such traditions are based upon actual experiences or events of the dim past: the apocalyp-

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ticsians represent them as belonging to the future and this is also true

It is probable that the apocalypticians (Isaiah, Daniel, Ezekiel, John, etc) hardly understood a word of the myths which they laid under contribution But while they took delight in uttering the dark sayings of old, while they attempted to utter deep things, they uttered deeper things than they intended and threw light upon some very dark matters

And for this the mythologist is indebted to them

The Revelation of John

A Document

of the Observation of the Cataclysm caused
by the Tertiary Satellite

THE Bible starts with a scant account of the creation of heaven and Earth, it ends with a detailed vision of the end of this heaven and this Earth, and the making of a new heaven and a new Earth. While the opening verses of the Old Testament are made obscure by their paucity of description, the closing chapters of the New Testament dazzle us by their extreme wealth of imagery. Many persons have expounded the creation myth in Genesis, the end of the evil old Earth and the rise of a glorious new one, in Revelation, cannot boast one staunch champion to date. It has been regarded as religious fiction, as belonging to a large class of strange literature called apocalyptic, with the chief difference that it represents a rounded-off whole while most of the other examples are fragmentary and scattered. The word 'apocalypse' means 'revelation', but what exactly was to be revealed has remained hidden. The *religious* truths which it doubtless contains, and which so many eminent divines have undertaken to find and expound, are quite independent of the splendour of those tremendous cosmic and terrestrial events which make this book unique. These descriptions are left over after the theologian has taken out all the grains of spiritual gold.

The Revelation of John

The characteristic bulk of the Book of Revelations remains unrevealed, sealed not with seven seals, but with seventy times as many

From this failure to withdraw the veil from the Apocalypse, it has been concluded that its central theme does not fall into the realm of religion at all. Moreover history is nonplussed by it, geology and geography find no reasonable approach, astronomy declares its cosmic pictures to be fancy. And even the mythologist can hardly do more than classify it, what exactly this 'cosmic myth' describes, he cannot say.

The school of mythology based upon the teachings of the Cosmic Ice Theory recognizes in the 'Revelation of St. John the Divine' another report of the cataclysm of the predecessor of our present Moon. It regards the Apocalypse as the most perfect 'myth' in existence on the subject of the breakdown of the Tertiary satellite, and as the handiest and best known story of that kind. Viewed from this standpoint, the 'vision' reveals itself as observation, and the 'symbols' become apparent as facts. And these facts speak so strongly for themselves that a commentary is hardly necessary.

We shall now give, side by side, the cosmic passages of the Apocalypse in the words of the Authorized Version and their meaning in the light of the Cosmic Ice Theory.

I General Description or Interpretation of the Surface Features of the huge Tertiary Satellite immediately before its Disintegration (Revelation I-V)

THE MYTH	AND	ITS MEANING
(1. 1) The Revelation of things which must shortly come to pass		The author of the Apocalypse avowedly used sources yielding the reports of eyewitnesses (cf.
sent and signified		

Interpretation of the Surface Features

THE MYTH (contd)	AND	ITS MEANING (contd)
unto John (2) who bare record of all things that he saw		2, also 11, 12, 19) However, being a futurist (cf also 3, 19, 1v 1, xxii 10), he imparts to the concrete happenings of the past the abstract form of a vision
(10) I was in the Spirit on the Lord's day, and heard behind me a great voice, as of a trumpet		The time of the events which are about to be described is the 'Lord's day' or the terrible 'day of the wrath of Yahweh' which so frequently looms up in the Jewish writings. The cosmic passages of chapters 1, 1v, v only describe, figuratively speaking, the 'dawn' of this awful 'day'. A description of the stage and the actors is given. The scene is laid in heaven, and rightly so, for at the time immediately before the beginning of the breakdown of the satellite the deformed Earth had attained a high degree of stability. The huge Tertiary satellite is described, very exactly, even minutely, and by no means as fancifully as it may seem at first sight. The most striking features of that cosmic body, as of our present Moon, were the craters or ring-pits which covered it. Our myth interprets them as 'candlesticks' (1 12) or 'lamps' (1v 5). The pictures suggested are for the candlesticks, 'saucerlike disks' for catching the dripping wax or tallow, and for the lamps, 'bowls' for rushlights. Other crater forms are described as 'stars' (1 16, small bright ones), 'seals', or, rather, seal-impressions (Greek <i>sphragis</i> , seal, sealing, v 1), 'seats' (that is, low stools or, rather, cushions,
(12) and I turned and saw seven golden candlesticks, (13) and in the midst of the seven candlesticks one like unto the Son of man, clothed with a garment and girt with a golden girdle		
(14) His head and his hairs were white like wool, as white as snow, and his eyes were as a flame of fire, (15) and his feet like unto fine brass, as if they burned in a furnace, and his voice as the sound of many waters (16) And he had in his right hand seven stars and out of his mouth went a sharp twoedged sword and his countenance was as the sun shineth in his strength		
(1v 1) After this I looked, and, behold, a door was opened in heaven, and the first voice which I heard was as it were of a trumpet talking with me (2) And immediately I was in the spirit and, behold, a throne was set in heaven, and one sat on the throne (3) And he that sat was to look upon like a jasper and a sardine stone and there was a rainbow round about the throne, in sight like unto an emerald (4) And round about the throne were four and twenty seats and upon		

The Revelation of John

THE MYTH (contd) AND ITS MEANING (contd)

the seats I saw four and twenty elders sitting, clothed in white raiment, and they had on their heads crowns of gold (5) And out of the throne proceeded lightnings and thunderings and voices and there were seven lamps of fire burning before the throne

(6) And before the throne there was a sea of glass like unto crystal and in the midst of the throne, and round about the throne, were four beasts full of eyes before and behind (7) And the first beast was like a lion, and the second beast like a calf, and the third beast had a face as a man, and the fourth beast was like a flying eagle (8) And the four beasts had each of them six wings about him, and they were full of eyes within

(v 1) And I saw in the right hand of him that sat on the throne a book written within and on the backside, sealed with seven seals (2) And I saw a strong angel proclaiming with a loud voice, Who is worthy to open the book, and to loose the seals thereof? (3) And no man in heaven, nor in Earth, neither under the Earth, was able to open the book, neither to look thereon (5) And one of the elders saith The Lion of the tribe of Juda, the Root of David, hath prevailed to open the book, and to loose the seven seals thereof (6) And I be-

as seats for inferiors, iv 4), or 'crowns' (circlets of gold, iv 4) Half-illumined ones appear as 'horns' One large ring-pit of central position is interpreted as a 'throne' (a low oriental dais-like seat is meant, iv 2), while an exceptionally big one, the Clavius of the Tertiary satellite's craters, is described as a kind of bathing-pool, a 'sea' ¹ Certain of the surface features of the satellite formed configurations in which the wondering eye saw—as in our Moon, a thoughtful face, a man with a bundle of sticks, a woman reading, a rabbit, or a crab—a 'man' of fantastic aspect, a company of 'elders', a 'scroll', a 'lamb' of peculiar appearance, or four 'beasts' of grotesque shape The whole surface of the satellite was pinholed with tiny craters, this is faithfully recorded in our myth indications are given in the descriptions of the 'man' and the 'elders', the 'scroll' or book is 'written upon' both within and without (scrolls usually are not!) and 'sealed' with seven 'seals' The most pronounced pinholing was observed in the 'beasts' they were covered with 'eyes' all over The satellite was shining brightly in the reflected sunlight, partly like gold and burnished brass, partly like snow and ice, here it was jasper-red and there sard-yellow, and in yet another place

¹ Compare this 'frozen pool' with the 'frozen pond' of the Ojibway myth quoted on p 74

Interpretation of the Surface Features

THE MYTH (contd.)

AND ITS MEANING (contd.)

held, and lo, in the midst of the throne and of the four beasts, and in the midst of the elders, stood a Lamb as it had been slain, having seven horns and seven eyes

(7) And he came and took the book out of the right hand of him that sat upon the throne

(8) And when he had taken the book, the four beasts and four and twenty elders fell down before the Lamb

(11) And I heard the voice of many angels round about the throne and the beasts and the elders and the number of them was ten thousand times ten thousand

emerald-green But all these shifted with the changing illumination, and it looked as if the iridescent colours of the rainbow were constantly playing over the whole

So far only the stage has been described, with all the actors motionless in their proper places in the scene Now, in chapter v, the curtain rises and the action begins We are given a very clear description of the breaking up of the distorted ice-coat of the satellite into slabs under the influence of the terrific terrestrial pull With this, and the vibrating movement caused by the insecure grip of the gravitational forces upon the inhomogeneous globe of the

satellite, a certain amount of animation became noticeable This made the 'book' with the seven 'seals' seem to sway to and fro as if unseen hands tried to open or unroll it The Earth's pull also caused the splitting-up surface material to move centreward into a kind of tidal apex This is interpreted as the moving forward of the 'elders' in a vain attempt to open the 'book' The central part of the satellite's surface now showed a new configuration a 'lamb' adorned with 'horns' and 'crowns' and 'eyes', whose sudden introduction at this point can only thus be reasonably explained The 'book' now logically disappeared from the 'throne', it was 'opened', that is, destroyed One 'seal' after another went, as the slab which was interpreted as the 'book' dissolved and its craters disappeared The power of the 'lamb' is expressed by the superlatives 'lion' and 'root' (the additions 'of Juda' and 'of David' are devoid of mythological meaning) With the disappearance of the 'book', that is, with the beginning of the disintegration of its centremost part, the satellite's surface was thrown more and more into confusion the configurations interpreted as 'beasts' and 'elders' pushed forward The hundred million 'angels' (or messengers sent forth) that left the 'throne' are the interpretation given to a picture which has already become familiar to us the ice-debris streamers leaving the zenith and nadir points of the doomed satellite

The Revelation of John

It is very interesting to compare the descriptions which John gives of the surface features of the Tertiary satellite with those contained in the cosmic passages of the vision of Ezekiel (1)

'A whirlwind came out of the north [ought to be, and surely originally was, *west*, but the author of the book wanted to indicate the place where foreign armies, and other harmful things, chiefly came from], a great cloud, and a fire infolding itself, and a brightness was about it, and out of the midst thereof [something] as the colour of amber [or, rather, electrum, argentiferous gold] Also out of the midst thereof came the likeness of four living creatures they had the likeness of a man And every one had four faces, and every one had four wings And their feet were straight feet, and the sole of their feet was like the sole of a calf's foot and they sparkled like the colour of burnished brass And they had the hands of a man under their wings on their four sides Their wings were joined one to another, they turned not when they went, they went every one straight forward As for the likeness of their faces, they four had the face of a man, and the face of a lion, an ox, and an eagle As for the likeness of the living creatures, their appearance was like burning coals of fire, and like lamps it went up and down among the living creatures, and the fire was bright, and out of the fire went forth lightning And the living creatures ran and returned as the appearance of a flash of lightning [There was] one wheel upon the Earth by the living creatures, with his four faces The appearance of the wheels was like unto the colour of a beryl and their appearance and their work was as it were a wheel in the middle of a wheel When they went, they went upon their four sides and they turned not when they went As for their rings, they were so high that they were dreadful, and their rings were full of eyes round about them four

Interpretation of the Surface Features

And when the living creatures went, the wheels went by them and when the living creatures were lifted up from the Earth, the wheels were lifted up When those went, these went, and when those stood, these stood for the spirit of the living creature was in the wheels And the likeness of the firmament upon the heads of the living creature was as the colour of the terrible crystal [ice] And when they went, I heard the noise of their wings, like the noise of great waters, as the voice of the Almighty, the voice of speech, as the noise of an host And there was a voice [thunder] from the firmament that was over their heads, when they stood, and had let down their wings And above the firmament that was over their heads was the likeness of a throne, as the appearance of a sapphire stone and upon the likeness of the throne was the likeness as the appearance of a man above upon it And I saw as the colour of amber, as the appearance of fire round about within it As the appearance of the bow that is in the cloud in the day of rain, so was the appearance of the brightness round about it This was the appearance of the likeness of the glory of the Lord '

The long and short of this rather confused passage, which reads very much like the description of a picture whose actual meaning has not been fully grasped, or like the laboured translation of a difficult and fragmentary text, is that something appeared in the heavens which was animated if considered as a whole, but lifeless if considered with regard to its parts The details filling the general frame (the 'firmament' or background, significantly described as consisting of ice) are vividly descriptive of the Tertiary satellite the ring-pits are interpreted as wheels and wheels within wheels covered with eyes, and thrones, while configurations of ring-pits and light and dark patches are likened to living (though motionless) creatures Only

The Revelation of John

the Cosmic Ice Theory, it will be admitted, can fill this passage with meaning

Ezekiel also describes the beginning of the disintegration The passage is given here for comparison with the version in Revelation

Ezekiel x 2 'And he [the Lord] spake unto the man upon the throne [called here 'the man clothed with linen', that is, brilliantly white], and said, Go in between the wheels, even under the cherub, and fill thine hand with coals of fire from between the cherubims, and scatter them over the city [Now follows a description of the cherubim and wheels similar, both in general outline and in details, to that in Ezekiel i 5-24 The beginning and advance of the disintegration caused the configurations of the satellite's surface to alter, to move centreward, and so on] (6) The man went in, and stood beside the wheels (7) And one cherub stretched forth his hand unto the fire that was between the cherubims, and took thereof, and put it into the hands of him that was clothed with linen who took it and went out [Cracks appeared] (8) And there appeared in the cherubims the form of a man's hand under their wings [Verse 21b describes the appearance of more cracks] [Now the outlines of part of the surface became hazy, Ezekiel x 3] The cloud filled the inner court (4) The house was filled with the cloud '

The breakdown itself is not described, but the whole Book of Ezekiel endeavours to illustrate the terrors of the 'day of wrath', though not in any cosmic sense The concluding chapters, as we might expect, contain descriptions of the New Earth after the Deluge, and the Holy City, and the Temple

The Cosmic Phenomena

II The Cosmic Phenomena caused by the Beginning and Advance of the Breakdown of the Tertiary Satellite, and the Terrestrial Phenomena caused by the Downrush of the Disintegrated Material and the gradual Waning and final End of the Satellite's Gravitational Powers (Revelation vi)

TILL MYTH (contd)

AND ITS MEANING (contd)

(vi 1) And I saw when the Lamb opened one of the seals, and I heard, as it were the noise of thunder (2) And I saw a white horse and he that sat on him had a bow, and a crown was given unto him and he went forth conquering, and to conquer (3) And when he had opened the second seal (4) there went out another horse that was red and power was given to him that sat thereon to take peace from the Earth, and that they should kill one another and there was given unto him a great sword (5) And when he had opened the third seal I beheld a black horse, and he that sat on him had a pair of balances in his hand (6) And I heard a voice in the midst of the four beasts say, A measure of wheat for a penny, and three measures of barley for a penny, and see thou hurt not the oil and the wine (7) And when he had opened the fourth seal (8) behold a pale horse and his name

The contrast between what has been told up till now, and what is to follow, is extreme the quiet minute survey of things is followed by an excited and detailed description of actions For the last part of the great cataclysm is now definitely starting

The ice-coat of the satellite was still more or less intact, but a new stage in the satellite's life had begun Its most striking feature was the destruction of the craters and other configurations, the 'opening of the seals' This powerful and graphic picture is retained as the introduction of every succeeding stage of the disintegration

Chapter vi starts with a general description of the four chief aspects of the dying satellite, so to speak a review of what is to follow, in the vision of the four horses and then riders The horsemen have unmistakable lunar attributes a bow (characteristic of many lunar deities), a sword (like Surt of the Edda), a

The Revelation of John

THE MYTH (contd) AND ITS MEANING (contd)

that sat on him was Death, and Hell followed with him And power was given unto them over the fourth part of the Earth, to kill with sword, and with hunger, and with death, and with the beasts of the Earth (9) And when he had opened the fifth seal, I saw under the altar the souls of them that were slain for the word of God, and for the testimony which they held (10) And they cried with a loud voice, saying, How long, O Lord, dost thou not judge and avenge our blood on them that dwell on the Earth? (11) And white robes were given unto every one of them, and it was said unto them, that they should rest yet for a little season, until their fellow-servants also and their brethren, that should be killed as they were, should be fulfilled (12) And when he had opened the sixth seal there was a great earthquake, and the sun became black as sackcloth of hair, and the Moon became as blood, (13) And the stars of heaven fell unto the Earth, even as a fig tree casteth her untimely figs, when she is shaken of a mighty wind (14) And the heaven departed as a scroll when it is rolled together, and every mountain and island were moved out of their places (15) And the kings of the Earth, and the great men, and the rich men, and the chief captains, and the mighty men, and every bond-

pair of scales The colour of the horses is descriptive of the four possible stages of the disintegration the ice-girt satellite appears as a white horse, the loess-covered core is correctly called yellowish red (*purros*), the core itself is dark-coloured (*melas*), and the crumbling metallic heart of the satellite appears as a pale (livid, yellowish, greenish *chlōros*) hoise This awesome vision of the four horsemen and their mounts, although it appears so, cannot really be called extravagant, for it is not unique We can place by its side at least one striking parallel In the 'Delusion of Gylfi' (Gylfaginning), that invaluable part of the Edda, we are told that shortly before the end of all things the giantess Hyrrockin rides over the Earth on a huge 'Wolf' bridled with 'serpents' (the ice and mineral debris leaving the apices of the satellite)

The four horsemen do not come empty-handed they bring war, murder, famine, and universal death and destruction Life, which had become more and more hard during the ages of the gradual approach of the satellite, now became practically unendurable Ruthlessly the stronger one asserted his will to live over the weaker ones Tribe fought against tribe and man against man The very beasts left their haunts to prey upon the warring troglodytes The 'axe-

The Terrestrial Phenomena

THE MYTH (contd)

AND ITS MEANING (contd)

man, and every free man, hid themselves in the dens and in the rocks of the mountains, (16) And said to the mountains and rocks, Fall on us, and hide us from the face of him that sitteth on the throne, and from the wrath of the Lamb (17) For the great day of his wrath is come, and who shall be able to stand?

time, sword-time, storm-time, wolf-time' of the Edda, the 'tiger age' of the Mayas, had begun

So far great changes had taken place in the heavens only, while the Earth had remained practically unscathed. The opening of the fifth seal voices impatient expectation, even disappointment, and describes the further progress of the disintegration, whose products are addressed as the souls of

slain saints whose number must still be added to before something can be done against the Earth. Indeed, the satellite must be almost entirely broken up before its waning powers are fully felt upon our planet.

With the breaking of the sixth seal this stage is reached. The material of the satellite being now distributed in a huge double ring round the Earth, its gravitational pull was greatly lessened and the terrestrial lentoid gradually regained its geoidal shape. Ceaseless earthquakes now shook the planet to its core. In the daytime the satellite's material darkened the heavens and obscured the sun, while at night-time, shining in reflected sunlight, it appeared as dense swarms of shooting stars. What still remained of the satellite's core sped through the heavens in a dull red glow. The first ice-blocks had by now spualled into the terrestrial atmosphere, they became dissolved into hail-clouds, and imparted what remained of their fall-velocity to the air-coat: a ceaseless western gale swept over the Earth. The movement in the tempest-riven sky looked like the springing together of an expanded parchment scroll when suddenly released. The waning powers of the satellite also caused the waters of the girdle-tide to spread north and south. The panic-stricken witnesses of the great cataclysm saw the familiar islands and hills sink into the waves. All ranks and classes were alike affected by the great disaster which had come over the Earth: chieftain and bond-man left their habitations and took to the mountains for safety, hiding in caves and rocky clefts to await the beginning of the great drama whose very prologue had been terrifying.

The Revelation of John

REVELATION VII

Before the curtain rose, before the cataclysm actually started, there was another pause 'And after these things I saw four angels standing on the four corners of the Earth, holding the four winds of the Earth, that the wind should not blow on the Earth, nor on the sea, nor on any tree' The author of the Apocalypse introduces many pauses, apparently to heighten his artistic effect In the present instance, however, the progress of the tale is interrupted because a very important business has to be performed 'I saw another angel ascending from the east, having the seal of the living God and he cried with a loud voice to the four angels, to whom it was given to hurt the Earth and the sea, saying, Hurt not the Earth, neither the sea, nor the trees, till we have sealed the servants of our God in their foreheads'

We may distinguish between two main groups of diluvians the shore-dwellers, and those who lived farther inland, between the shores of the girdle-tide and the fringes of the northern and southern ice-caps When the waning powers of the satellite caused the waters of the girdle-tide to encroach upon its shores, the shore-dwellers pressed inland and trespassed upon the settlements of the land-men Great battles were the result

To carry on an armed conflict efficiently an exact sundering of the hostile parties is necessary The partisans must follow a distinct flag and must wear a distinct badge upon their persons This is what is reported of the one party in chapter vii and of the other party in chapter xiii 16

What were the 'seals' and 'marks' which they painted on their foreheads and tattooed on their sword-arms?

We do not know, for we are not told—but perhaps we are not on a false trail if we reason as follows One

The Cosmic Phenomena




party, the land-dwellers most probably, sought their salvation in the worship of the Sun they took their badge from the 'angel of the *east*', as is expressly stated in our myth. The views of the other party were diametrically opposed they believed that the dragon could be propitiated by taking their sacred symbol from it, the powerful being of the *west*.

We must not forget that the satellite in those days gave a very different impression from our own now. Luna's tiny silver disk, no bigger than a pea held at arm's length, rises in dreamlike gentleness out of the east, smiling kindly down upon the sleeping world, by day it is so pale that the eye can scarcely distinguish it. The Tertiary satellite, in its closing period, shot up, a gigantic lurid wheel full of terrifying surface features, in the west, leapt over the Earth, and plunged down out of sight in the east. This rapid transit happened three times a day in the last stages of the satellite's existence, when that body had the apparent size of a coachwheel viewed from a distance of two or three paces. The spectacle made a deep and powerful impression on man, an impression which lasted through the asatellitic aeon after the Tertiary cataclysm, and has even come down to us. For, as we have seen in an earlier chapter, the Aztecs designated the west as the chief cardinal point, the Jews have a myth that formerly the Lord caused the 'Sun' (the dominating heavenly body of that time, the huge, bright satellite, is meant) to rise in the west, the Egyptian dragon Apepi rushed forth from the west, and the goddess Sekhet, who helped Hathor in the great annihilation of mankind, is called the 'Great Lady of the West'.



The impression of the Sun-worshipping land-men must have been that the heavens were breaking into pieces. They therefore tried to help the damaged firmament magically by putting up props, and showed their faith by

The Revelation of John

painting symbols of the props upon their persons. Everybody thus marked was, so to speak, a prop of heaven.

The prop symbol is the Cross in its manifold forms. The sign of the cross accompanies man from the dawn of his civilization. It is a universal symbol found both in the eastern and western hemispheres. Everywhere saving, preservative, conservative properties are attributed to it: the person who wears it is proof against evil, is lucky, prospers, and so on. The earliest cross was probably the *crux simplex*, |, an upright pale, or stake, or obelisk—the heaven-supporting pillar. The Egyptians say that the iron roof of the world, the sky, is supported by four strong pillars (with struts for more efficient distribution of the thrust on the king-posts) , at the four cardinal points. A development was the Tau-cross, T, which did the same trick much better. The cross proper, +, is derived from another conception: its extreme ends are the four cardinal points, and they are connected by a system of girders, giving greater strength. The upright props are understood, while, in the svastika or gammadion, they are depicted, in a primitive and miscarried endeavour at perspective.  Sometimes no chances are taken and the firmament is drawn upon the crossbeams , a suggestion which it evidently followed, for there have been no complaints since the making of the new roof of our world!

Incidentally, some cross forms are used as race signs, as fire symbols, as solar symbols, as badges of power. These meanings, too, are derived from the time of the cataclysm.

In opposition to the 'cross', +, stands the 'trident', . This is the other sacred symbol. It, too, is practically universal. It is the 'sign of the Beast', being probably derived from the disintegrating satellite, the debris-stream leaving the open sickle . The Brahman still paints

The Cosmic Phenomena

it upon his forehead in the sacred white, $\cup \Psi$, and red, \mid , colours $\cup \Psi$ It is essentially connected with water, and rule over the waves Poseidon holds it, and Neptune, and many Indian and other deities It is the sign of the highest race or caste, of those significantly named 'the twice-born ones' Some of the original users of the symbol were indeed born again, for they entered through the jaws of death and hell into the calm of the postdiluvian age

The 'trident' is also connected with the three lines of the water sign \approx in Egypt, and the three vavs of the mystical number '666' $\{\{\{\}$ or $\}\}\}$

The svastika, though by no means originally a national or race symbol, nor indeed an exclusively Aryan sign, has of late been taken as the 'slogan-symbol' of various of the extreme nationalist (antisocialist, anti-Semitic) movements in Central Europe (卐 卐 , 卐 , 卐 , the Austrian Fascists or 'Patriots' use the artificially constructed double svastika $\text{卐} + \text{卐} = \text{卐}$, or crutch-cross) The reaction of the Socialists to the adoption of this symbol by the Fascists was thoroughly typical the trident, or the 'three arrows' ||| In fact, it is the only possible symbol to oppose to the svastika or to any kind of cross the progressive arrow sign to the stationary prop-cross, the watery vav-figure to the fiery gammadion! However, when this was pointed out to various leaders of the movement which uses the trident as its sacred symbol, with various symbolological, mythological, mystical, magical explanations, and with theoretical remarks relating to the Cosmic Ice Theory, this interpretation was scornfully and even indignantly repudiated They were 'three arrows' pure and simple, standing for the three aims Liberty, Equality, Fraternity

The Revelation of John

III Cosmic and Terrestrial Phenomena caused by the further Advance and End of the Disintegration of the Tertiary Satellite (Revelation viii-xii)

THE MYTH (contd) AND ITS MEANING (contd)

(viii 1) And when he had opened the seventh seal, there was silence in heaven about the space of half an hour (2) And I saw the seven angels and to them were given seven trumpets (3) And another angel came having a golden censer (5) And the angel took the censer, and filled it with fire and cast it into the Earth and there were voices, and thunderings, and lightnings, and an earthquake (6) And the seven angels which had the seven trumpets prepared themselves to sound (7) The first angel sounded, and there followed hail and fire mingled with blood, and they were cast upon the Earth and the third part of trees was burnt up, and all green grass (8) And the second angel sounded, and as it were a great mountain burning with fire was cast into the sea, and the third part of the sea became blood, (9) And the third part of the creatures which were in the sea died, and the third part of the ships were destroyed (10) And the third angel sounded, and there fell a great star from heaven, burning as it were a lamp, and it fell upon the third

The time which intervened between the beginning of the disintegration and the falling of the satellite's material upon the Earth is not inaptly called 'silence' It was really the breathless expectation of things to come The first phenomenon is a repetition of the events described in chapter vi 12-13 The fall of fire is out of place here, but if we interpret it, as we assuredly must, as dense swarms of the satellite's wreckage, as 'falling stars', the position of the verse is quite correct The howling caused by the ice and ore blocks cutting through the air is interpreted as 'voices' Earthquakes of increasing violence now become a permanent feature The lightnings and thunderings describe the meteorological conditions furious hailstorms, first mentioned here, lash the Earth, meteor-swarms descend, rains of reddish mud, or loess, fall The catastrophe has now found new victims the plants

Bigger and huge core-fragments now come down the 'blazing mountains' and 'fiery stars' (The Bundahish, the Pārsī see Genesis, speaks of the great

Cosmic and Terrestrial Phenomena

THE MYTH (contd)

AND

ITS MEANING (contd)

part of the rivers, and upon the fountains of waters, (11) And the name of the star is called Wormwood and the third part of the waters became wormwood, and many men died of the waters, because they were made bitter (12) And the fourth angel sounded, and the third part of the sun was smitten, and the third part of the moon, and the third part of the stars, so as the third part of them was darkened, and the day shone not for a third part of it, and the night likewise (13) And I beheld, and heard an angel flying through the midst of heaven, saying with a loud voice, Woe, woe, woe to the inhabitants of the Earth, by reason of the other voices of the trumpet of the three angels, which are yet to sound!

(14. 1) And the fifth angel sounded, and I saw a star fall from heaven unto the Earth and to him was given the key of the bottomless pit (2) And he opened the bottomless pit, and there arose a smoke out of the pit, as the smoke of a great furnace, and the sun and the air were darkened by reason of the smoke of the pit (3) And there came out of the smoke locusts upon the Earth and unto them was given power (4) And it was commanded them that they should not hurt the grass of the Earth, neither any green thing, neither any tree, but only those men which have not the seal of God in

star Gochai falling upon the Earth during the battle of Satan against the good world) The sea is churned into a thick brown soup, and the water, charged with noisome gases generated through the quenching of the hot or glowing core-debris, no longer sustains the life of the creatures that inhabit it Many of the boats and rafts of the shore-dwellers were cast ashore or sank The spreading of the gulf-tide also caused the ground-water to rise, and to get brackish, salty, bitter This destruction of the water supply during the cataclysm also explains the great importance which is attributed in many myths to the 'water of life', the first pristine spring discovered after the catastrophe We meet it again in the closing chapters of Revelation

Now follows a passage which is not in its correct place it ought to be more in front, at the end of Chapter v, perhaps What is meant by the 'smiting' of Sun, Moon, and stars, is quite clear the quick-moving satellite causes three total solar eclipses a day, and is itself eclipsed three times each night The stars are completely blotted out by the huge dark disk of the satellite The faithfulness of observation recorded in this verse is remarkable

After the more superficial earthquakes, disturbances of the lithosphere, volcanic phenomena,

The Revelation of John

THE MYTH (contd) AND ITS MEANING (contd)

their foreheads (5) And to them it was given that they should not kill them, but that they should be tormented five months (11)

And they had a king over them, which is the angel of the bottomless pit, whose name in the Hebrew tongue is Abaddon, but in Greek Apollyon (13) And the sixth angel sounded, and I heard a voice (14) saying Loose

the four angels which are bound in the great river Euphrates (15) And the four angels were loosed, which were prepared to slay the third part of men (17) And thus I saw the horses and them that sat on them, having breastplates of fire, and of jacinth, and brimstone and the heads of the horses were as the heads of lions, and out of their mouths issued fire and smoke and brimstone (18) By these three was the third part of men killed, by the fire, and by the smoke, and by the brimstone (20) And the rest of the men which were not killed by these plagues yet repented not of the works of their hands, that they should not worship devils, and idols of gold, and silver, and brass, and stone, and of wood which neither can see, nor hear, nor walk (21) Neither repented they of their murders, nor of their sorceries, nor of their fornication, nor of their thefts

(x 1) And I saw another mighty angel come down from heaven, clothed with a cloud and

set in flaming mountains jutting up their cones, rivalling the raging heavens in their fury (The Greek for 'bottomless pit' is more expressive 'the well, or crater, of the abyss') Magma was squeezed up, forming fiery lakes of wide expanse

The verse-group 3-11 is very difficult These verses describe locusts that leave plants unscathed, but plague men for five months, they come out of the smoke of the bottomless pit, a most unlikely place for insects to come from What is suggested by these verses is probably something like this An extremely harmful plague, comparable, for want of a better object of comparison, to a plague of locusts, the most destructive of all insects the East knows, had come over the world Sulphurous poisonous gases, ice and stone hail, shortage of food, were destroying mankind as the locust destroys plants That is why the king of these apocalyptic 'locusts' is called 'the Destroyer', Hell personified

This interpretation of the 'locusts' would be in keeping with the picture of the armies of fantastic riders on fantastic horses which follows It seems, in fact, as if the 'horses' were only a development of the 'locusts' They offer the definite picture of long-tailed meteors The death of men through asphyxia and burning is now expressly mentioned

Cosmic and Terrestrial Phenomena

THE MYTH (contd)

AND

ITS MEANING (contd)

a rainbow was upon his head, and his face was as it were the sun, and his feet as pillars of fire (2)

and he set his right foot upon the sea, and his left foot on the Earth, (3) and cried with a loud voice, as when a lion roareth and when he had cried, seven thunders uttered their voices (4) And

I was about to write and I heard a voice from heaven saying unto me, Seal up those things which the seven thunders uttered, and write them not (5) And the angel which I saw stand upon the sea and upon the Earth lifted up his hand to heaven, (6) and sware

that there should be time no longer (7) But in the days of the voice of the seventh angel, when he shall begin to sound, the mystery of God should be finished

(11 4) These are the two candlesticks (5) and if any man will hurt them, fire proceedeth out of their mouth, and devoureth their enemies (6) These have power to shut heaven, that it rain not and have power over waters to turn them to blood, and to smite the Earth with all plagues, as often as they will (7) And when they shall have finished the beast that ascendeth out of the bottomless pit shall make war against them

and kill them (8) And their dead bodies shall lie (9)

unburied (10) And they that dwell upon the Earth shall rejoice because these two

The closing verses of the chapter express the firm conviction of the author that the great cataclysm is expressly sent to punish that part of mankind which is 'wicked' Such tendentious teleological explanations are frequently given in world-destruction and deluge stories In reality escape from the pandemonium of unchained blind cosmic, seismic, volcanic forces was a matter of rare chance

The tenth chapter takes us back again to the earlier stages of the breakdown of the satellite It presents to us the rare snapshot of a special aspect of the disintegrating satellite as it could be observed from certain favourable positions at a certain time in the afternoon The Sun was sinking towards the horizon while the huge satellite with its zenith and nadir streamers of wreckage was just shooting up again And now the diluvian, in his excited state, saw a terrible vision a shape like a fantastic human being striding over land and sea with fiery legs Its 'head' was the Sun, its 'arms' the sickle of the satellite before the eclipse, its 'body' the dark part of the satellite, dimly lit by the light reflected by the Earth, and its 'legs' the streamers of wreckage But before he could obtain more than a general view of the shape it was gone, and he stood in the dense blackness of the eclipse,

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THE MYTH (contd)

AND ITS MEANING (contd)

tormented them (11) And after three days and an half the spirit of life entered into them, and they stood upon their feet, and great fear fell upon them which saw them (12) And they heard a great voice from heaven saying unto them, Come up hither And they ascended up to heaven in a cloud, and their enemies beheld them (13) And the same hour was there a great earthquake, and the tenth part of the city fell, and in the earthquake were slain of men seven thousand and the remnant were affrighted (15) And the seventh angel sounded, and there were great voices in heaven (19) and there were lightnings, and voices, and thunderings, and an earthquake, and great hail

(xii 1) And there appeared a great wonder in heaven, a woman clothed with the sun, and the moon under her feet, and upon her head a crown of twelve stars (3) And there appeared another wonder in heaven a great red dragon, having seven heads and ten horns, and seven crowns upon his heads (4) And his tail drew the third part of the stars of heaven, and did cast them to the Earth (7) And there was war in heaven Michael and his angels fought against the dragon, and the dragon fought and his angels, (8) and prevailed not, neither was their place

unable to see anything but the streamers of material leaving the satellite, which swept over the heavens like chastising rods The earth quaked round him, and the groaning of the ground under his feet blended with the roaring of thunder over his head Time indeed was at an end, there was neither night nor day, for the day was darkened and the night was lit by the swarms of wreckage from the satellite The cataclysm was progressing towards its climax

The eleventh chapter describes peculiar volcanic eruptions and explosions, but the original meaning has greatly suffered by the editor's endeavours to impart another sense to it The 'candlesticks' are volcanic cones Their power of preventing rainfall is to be interpreted as meaning that, at the time when volcanic eruptions were most vehement, the zenith ice-block ring was already exhausted, while the nadir ice-block ring was not yet near enough to produce rain and hail The observation is correct, only the linking of cause and effect is wrong As we are approaching the final stages of the satellite's breakdown and the climax of the cataclysm, our explanation has a certain amount of probability on its side The great earthquake which is repeatedly mentioned at the end of the chapter points to the increasing instability of

Cosmic and Terrestrial Phenomena

THE MYTH (contd)

AND ITS MEANING (contd)

found any more in heaven (9) And the great dragon was cast out, that old serpent, called the Devil, and Satan, which deceiveth the whole world: he was cast out into the Earth, and his angels were cast out with him (10) And I heard a loud voice saying in heaven, Now is come salvation (12) Therefore rejoice, ye heavens, and ye that dwell in them: Woe to the inhabitants of the Earth and of the sea! for the devil is come down unto you, having great wrath, because he knoweth that he hath but a short time (13) And when the dragon saw that he was cast unto the Earth (15) he cast out of his mouth water as a flood (16) and the Earth opened her mouth, and swallowed up the flood which the dragon cast out of his mouth

the lithosphere, a state which favours the squeezing out of magma

The eleventh chapter mentions a terrible fall of 'great hail' in its last verse. This points to the end of the descent of the satellite's wreckage. The cataclysm started with a fall of hail (VIII 7), at its height there was a bombardment of metallo-mineral material, now at last the outer ice-block ring comes down, and we have the last mention of hail. The meteorological phenomena cease now. The remaining chapters of our myth describe only further terrestrial consequences and the developments after the end of the great cosmic catastrophe.

Chapter XII, like Chapter I, starts with a fantastic vision after the 'angel', a 'woman'. Certainly only a special aspect of a total eclipse of the Sun is interpreted thus, but somehow one is reminded of Tiamat or Apep or

Sekhet! The solar 'clothes' may be corona rays, the starry crown (the number of the stars is arbitrarily augmented or limited to a dozen) may be some constellation which became visible in an appropriate place during the eclipse. The 'moon' mentioned here would be a sickle-shaped portion of the lower part of the dark satellite's disk, lit by reflected light from the Earth. (The story of this vision is greatly obscured by another myth which has been intertwined with it. It has been eliminated here. It is a birth myth, such as are frequently found in connection with deluge stories.)

The supposition that the 'woman' is a Tiamat echo is helped by the fact that she seems to be somehow connected, if not identical, with the 'great red dragon' of verse 3. Various threads which have been dropped in Chapter VI are now taken up again and mythologically elaborated. There is, above all, the verse, VI 13, whose matter-

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of-fact statement 'the stars fell from heaven as thick as fruit from a tree in a high wind' appears in the magnificent form 'a fiery dragon knocked the stars of heaven out of their places by the tremendous lashing of its tail' Moreover the twelfth chapter of Revelation contains the only outspoken, detailed, and complete dragon-fighting myth in the Bible. The Jews apparently did not like their Yahweh to figure as a serpent-slayer. Though many coarse traits remained after all endeavours of the priests to spiritualize their deity, the dragon myth has been completely eliminated from the story of the 'Beginning of Things' in Genesis 1, we can only guess at its original presence from the scattered allusions and oblique hints which are rather plentiful in the later, more popular, literature. In the present instance Michael and his host fight against, and naturally conquer, the nameless many-headed dragon and its army. Michael is just the right *locum tenens* for, as Yahweh is without peer among the Elohim, so Michael towers above the ranks of the heavenly host. It is a very remarkable and magnificent archaic trait that it is Michael-Marduk who conquers the dragon Tiamat and not the 'Child' born at the climax of the cataclysm. We may infer from this that the birth myth is added to the dragon myth and that the equation the 'Child' = Christ, is not original! Michael, like Marduk, treads the fiery dragon and casts it with its 'angels' or companions, the streams of wreckage, out on the Earth. With the complete disintegration of the satellite, the dragon disappears from the sky: it literally leaps down on the Earth and continues its devastations there. Therefore the hosts of heaven rejoice, for their work—the undoing of the 'dragon', which, however, wrecked itself—is over, but the inhabitants of the Earth groan more loudly, as earthquakes open chasms, and the Deluge roars over the planet.

This is the first of the two great myths of the Tertiary cataclysm from which the Apocalypse was compiled. It is incomplete, for a description of the time after the Great Fire and the Great Flood is lacking. Such a closing scene doubtless existed in the original myth which our author used, but was eliminated in order to allow a better connection with the second myth. In the two final chapters of Revelation, *xxi* and *xxii*, we find a description of the New Age, but to which of the two traditions it originally belonged we cannot now decide.

Another Version of the Cataclysm

IV Another Version of the Cataclysm (Revelation XIII-XVI, XIX-XX, and XXI-XXII)

THE MYTH

AND

ITS MEANING

(XIII 1) And I stood upon the sand of the sea, and saw a beast rise up out of the sea, having seven heads and ten horns, and upon his horns ten crowns, and upon his heads the name of blasphemy (2) And the beast which I saw was like unto a leopard, and his feet were as the feet of a bear, and his mouth as the mouth of a lion and the dragon gave him his power, and his seat, and great authority (3) And I saw one of his heads as it were wounded to death, and his deadly wound was healed, and all the world wondered after the beast (4) And they worshipped the dragon which gave power unto the beast, saying, Who is like unto the beast? who is able to make war with him? (5) And there was given unto him a mouth speaking great things and blasphemies, and power was given unto him to continue forty and two months (6) And he opened his mouth in blasphemy against God, to blaspheme his name and them that dwell in heaven (7) And it was given unto him to make war with the saints, and to overcome them (11) And I beheld another beast coming up out of the Earth, and he had two horns like

With Chapter XIII a new myth begins, which treats of the same theme as the first, contained in chapters I-XII. It is a close parallel to the other but has enough individual traits to allow us to establish its independence.

The introductory verses give two descriptions of the aspect of the huge Tertiary satellite immediately before its disintegration. The reference to the spotted leopardlike appearance of the 'beast' is significant: it allows us to recognize the ring-pitted face of the satellite. Verse 2b is impossible in its present form: it was the 'beast' (the satellite before its breakdown started) that developed into a 'dragon' (the satellite during the breakdown) and not the other way round. Verse 3 describes the beginning of the destruction of the satellite's ice-coat, which caused its surface features to change. This state of things lasted for 'forty-two months', a period whose actual length we cannot determine. Verse 4 tells of the impression the 'beast' made on the people of the Earth, and verses 5-7 describe the fight of the Tiamat beast with the Elohim.

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THE MYTH (contd) AND ITS MEANING (contd)

a lamb, and he spake as a dragon (12) And he exerciseth all the power of the first beast before him, and causeth the Earth and them which dwell therein to worship the first beast, whose deadly wound was healed (13) And he doeth great wonders, so that he maketh folk come down from heaven on the Earth in the sight of men, (14) and deceiveth them that dwell on the Earth by the means of those miracles which he had power to do in the sight of the beast, saying to them that dwell on the Earth, that they should make an image to the beast, which had the wound by a sword, and did live (15) And he had power to give life unto the image of the beast, that the image of the beast should both speak, and cause that as many as would not worship the image of the beast should be killed (16) And he causeth all, both small and great, rich and poor, free and bond, to receive a mark in their right hand, or in their foreheads (17) and that no man might buy or sell, save he that had the mark, or the name of the beast, or the number of his name (18) And his number is Six hundred threescore and six.

(xiv 2) And I heard a voice from heaven, as the voice of many waters, and as the voice of a great thunder (9) saying with a loud voice, If any man worship the beast and his image,

The second description reports various developments in the surface features, some of which are already pointing to the beginning of the disintegration. The increasing stress of the times caused the growth of the 'beast-worship', one of the chief outward features of which seems to have been the painting of the party-symbol—the 'mark', 'name', or 'number'—upon forehead and right hand. The symbol of the moon-worshippers is 666.

There is no sense in this. Nobody would tattoo three 'sixes' upon his forehead. 666 is not a 'sacred' number—3 is, and 7, and others. One explanation is that the number has been looked upon as a sum, and the solution has been sought in a name the Hebrew numeric value of whose letters would add up to 666. Such cryptic play upon names seems to have been popular in the East at one time. Casting about for a suitable name, it was found that the Greek words for 'Nero, Cæsar' when written in Hebrew characters give the sum of 666 (or 616, or 676, if less artistically written, such variants actually occur in other writings). According to this theory, the author of Revelation was actually thinking of Nero when he denounced the 'beast', but this explanation has never been completely satisfactory, and is quite impossible now that the 'beast' is identified with the dying

Another Version of the Cataclysm

THE MYTH (contd)

AND

ITS MEANING (contd)

and receive his mark in his forehead, or in his hand, (10) the same shall drink of the wine of the wrath of God and he shall be tormented with fire and brimstone (11) And the smoke of their torment ascendeth up for ever and ever and they have no rest day nor night, who worship the beast and his image, and whosoever receiveth the mark of his name

(14) And I looked, and beheld a white cloud, and upon the white cloud one sat like unto the Son of man, having on his head a golden crown, and in his hand a sharp sickle (15) And another angel came crying with a loud voice to him that sat on the cloud, Thrust in thy sickle, and reap for the time is come for thee to reap, for the harvest of the Earth is ripe (16) And he that sat on the cloud thrust in his sickle on the Earth, and the Earth was reaped (17) And another angel came he also having a sharp sickle (18) And another angel came which had power over fire, and cried with a loud voice to him that had the sharp sickle, saying, Thrust in thy sharp sickle, and gather the clusters of the vine of the Earth, for her grapes are fully ripe (19) And the angel thrust in his sickle into the Earth, and gathered the vine of the Earth, and cast it into the great winepress of the wrath of God (20) And the winepress

Tertiary satellite What, then, does the 'number' of the beast which came out of the sea mean?

It is not a number at all—it is the trident symbol, the water hieroglyph, which has already been mentioned

For the number '666' need not be regarded as the sum of *Kaisar Nerōn*, קסר נרון, 50 + 6 + 200 + 50 + 200 + 60 + 100 (reading both the Hebrew letters and the line of figures from back to front), but may be taken, quite simply, as standing for 6 + 6 + 6, the threefold repetition of the Hebrew letter *vav* ו, numerically interpreted. And this again is a mistaken rendering into Hebrew characters of the (not only Egyptian, but also natural and evident) water symbol \approx or $\{ \}$ or $\{ \}$ or $\{ \}$ or $\{ \}$.

Verses 14-19 describe certain aspects of the Tertiary satellite the sickle forms, which have not been mentioned in any of the previous visions. Two sickle shapes are possible one open to the west and one open to the east (verses 14 and 17). The whole passage has a great similarity with the tale of Surtr and the Sons of Muspel in the Edda, Surtr, too, rages through the heavens and at last flings fire over the whole world. Various stages have been skipped, but there can be no doubt that the disintegration has started, that

The Revelation of John

THE MYTH (contd)

AND

ITS MEANING (contd)

was trodden without the city, and blood came out of the winepress, even unto the horse bridles, by the space of a thousand and six hundred furlongs

(xv 1) And I saw another sign in heaven, great and marvellous, seven angels having the seven last plagues, for in them is filled up the wrath of God (2) And I saw as it were a sea of glass mingled with fire (7) And one of the four beasts gave unto the seven angels seven golden vials full of the wrath of God

(xvi 1) And I heard a great voice saying to the seven angels, Go your ways, and pour out the vials of the wrath of God upon the Earth (2) And the first went, and poured out his vial upon the Earth, and there fell a noisome and grievous sore upon the men which had the mark of the beast, and upon them which worshipped his image (3) And the second angel poured out his vial upon the sea, and it became as the blood of a dead man, and every living soul died in the sea (4) And the third angel poured out his vial upon the rivers and fountains of waters, and they became blood (8) And the fourth angel poured out his vial upon the sun, and power was given unto him to scorch men with fire (9) And men were scorched with great heat (10) And the fifth angel poured out his vial upon the seat of the beast, and

satellitic material is descending, and that the loess-charged, brownish waters of the gullie-tide are leaving their shores the 'blood out of the winepress in which the grapes of wrath are trodden', as our author poetically describes the beginning of the Deluge

The seven 'plagues' or 'vials' which now follow are really unrelated to the two heptads of 'seals' and 'trumpets' of the first myth. The word 'last' in verse 1 is an addition of the redactor who had to connect the two stories

Verses 2 and 7 give a description of the Tertiary satellite before its disintegration. The passage is valuable because it emphasizes the material of the satellite's surface. But the verses are out of place here, and are, moreover, a mere repetition (cf iv 5-7)

Chapter xvi is directly connected with the events of Chapter xiv. After the (ice and) fire hail (xiv 18, xvi 8-9) the destruction of food and water supplies and the poisoning of the air caused men to die under a maximum of torment, above all the shore-dwellers, who had put their trust in the dragon. The spreading waters drove them from their old homes, they had to suffer much from the ore-hail, the rising ground-waters made their water brackish and bitter. The mud-rains spoilt even those rivers and

Another Version of the Cataclysm

THE MYTH (contd)

AND

ITS MEANING (contd)

his kingdom was full of darkness

(12) And the sixth angel poured out his vial upon the great river Euphrates, and the water thereof was dried up

(13) And I saw three unclean spirits like frogs come out of the mouth of the dragon (17)

And the seventh angel poured out his vial into the air, and there came a great voice out of the temple of heaven saying,

It is done (18) And there were voices, and thunders, and lightnings, and there was a great earthquake, such as was not since men were upon the Earth, so mighty an earthquake, and so great (19) And the great city was divided into three parts, and the cities of the nations fell (20)

And every island fled away, and the mountains were not found (21) And there fell upon men a great hail out of heaven, every stone about the weight of a talent the plague thereof was exceeding great

(xix 6) And I heard as it were the voice of a great multitude, and as the voice of many waters, and as the voice of mighty thunders (11) And I saw heaven opened, and behold a white horse, and he that sat upon him was called Faithful and True, and in righteousness he doth judge and make war (12) His eyes were as a flame of fire, and on his head were many crowns, and he had a name written, that

was which were sufficiently far away from the advancing waves

(4) The sea, which had hitherto yielded them plenty of food, became so polluted that much of its life died The sky, 'the seat and kingdom of the beast', became black with dense clouds which enwrapped the Earth Verse 12 describes a special aspect of the flowing off of the gudge-tide It allows us a guess at the latitudinal position of the island refuge of the reporter of our myth or, if it should consist of different parts, of this particular passage of the myth An arm of the sea (the mythical 'great river Euphrates' of this verse is, of course, not identical with the geographical river in Mesopotamia) became dry, when land emerged out of the waters of the flowing-off gudge-tide This is quite in keeping with the statement in xxi 1

The island refuge is perhaps to be sought in the Abyssinian highlands Verse 13 fancifully describes an aspect of the disintegration out of the 'mouth' of the 'dragon' (the satellite's sickle at the head of the tail of debris) come 'unclean spirits' (more debris)

Verses 17-21 describe the end of the cataclysm thunderstorms, terrible earthquakes, falls of huge, undissolved blocks of ice (again correctly mentioned as the closing phenomenon of the catastrophe, the hailstorms at the

The Revelation of John

TIL MYTH (contd) AND ITS MEANING (contd)

no man knew, but he himself (13) And he was clothed with a vestuie dipped in blood, his name is called The Word of God (14) And the armies which were in heaven followed him upon white horses, clothed in fine linen, white and clean (15) And out of his mouth goeth a sharp sword, that with it he should smite the nations and he shall rule them with a rod of iron and he treadeth the winepress of the fierceness and wrath of Almighty God (19) And I saw the beast, and the kings of the Earth, and their armies, gathered together to make war against him that sat on the horse, and against his army (20) And the beast was taken, and with him the false prophet that wrought miracles before him, with which he deceived them that had received the mark of the beast, and them that worshipped his image These both were cast alive into a lake of fire burning with brimstone (21) And the remnant were slain with the sword of him that sat upon the horse, which sword proceeded out of his mouth

(xx 10) And the devil was cast into the lake of fire and brimstone, where the beast and the false prophet are, and shall be tormented day and night for ever and ever (11) And I saw a great white throne, and him that sat on it, from whose face the Earth and the heaven fled away,

beginning are not recorded), and the sweeping of the unchained waters of the girdle-tide over the whole world Verse 20 is perhaps contributed by a more northerly observer

In Chapter xiv we find another myth which in spirit and outlook adjoins the second apocalyptic report It is a clear Marduk-Tiāmat story The description of Marduk contains many lunar features fiery 'eyes', many 'crowns', a sharp 'sword' This becomes all the more evident if we remember that Marduk is also one of the aspects of the dying satellite The unknown 'name' may have some connection with the symbols which men put upon their foreheads and sword-arms, perhaps with the 'number 666' The 'vestuie dipped in blood' is an allusion to the reddish colour of the satellite after its ice-coat had been stripped off The satellite is followed by streamers of debris, interpreted here as columns of divine armies Verse 19 describes another aspect of the Tertiary satellite the 'beast' Tiāmat with her terrible crew of chthonic and other forces The 'false prophet' mentioned in verse 20 may be an allusion to Apsū, Tiāmat's husband and companion, an earlier aspect of the satellite After being overcome, the volcanic forces awaken to a short but violent activity the lithosphere, in its endeavours to

Another Version of the Cataclysm

THE MYTH (contd) AND ITS MEANING (contd)

and there was found no place for them (4) and [those] which had not worshipped the beast, neither his image, neither had received his mark upon their foreheads, or in their hands lived a thousand years (5)

This is the first resurrection (13) And the sea gave up the dead which were in it, and death and hell delivered up the dead which were in them (15) And whosoever was not found written in the book of life was cast into the lake of fire (14) And death and hell were cast into the lake of fire This is the second death

(XXI 1) And I saw a new heaven and a new Earth for the first heaven and the first Earth were passed away, and there was no more sea (4) There shall be no more death, neither sorrow, nor crying, neither shall there be any more pain for the former things are passed away (5) Behold, I make all things new

(7) He that overcometh shall inherit

regain a spherical shape, squeezes up enormous masses of lava, burning lakes—the basalt and other flows which now impress us so strangely Into this 'lake of fire burning with brimstone' it seemed as if Tiāmat and her followers were hurled

The same thread is followed in Chapter XX, where the 'diagon' form of the 'beast', the 'flinger' or 'thrower' (devil), is also cast into the lava lakes There they all are in 'torment', struggling against their chains for a long time after the end of the satellite the subterranean powers did not come to rest, and the Earth shook as if the imprisoned monsters were trying to break loose Verse 11 is perhaps not in its correct position, as it may be an allusion to the capture of the planet Luna The latter part of the verse, however, describes changes which came about owing to the different conditions now obtaining on Earth and in heaven the sky became clearer, and much of the 'earth' or dry land of those days was submerged

Those who had not been killed during the cataclysm entered the calm, new era Our author would

have us believe that only the 'good' were granted the new life, and that even those who had been killed because of their 'goodness' came to life again This he calls the 'first resurrection' the going forth from the caves, the being lifted out of the terrors of death, the exhumation or unearthing out of the graves or dens they had dug for shelter A 'second resurrection' is not mentioned, it is a dogma, not a tradition

Verse 13 depicts a gruesome scene after the Deluge, the bodies of many of those who had been drowned were washed ashore But

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though they returned from 'death and hell' they remained dead. Perhaps lava-flows descended to the water's edge it seemed as if the bodies were cast into the lake of fire. This was the second death they were wiped out completely. In the Edda we find a parallel in the ship Naglfar which comes drifting on the waters, loaded with dead bodies, at the end of the cataclysm.

After the cataclysm death—that is, violent death, death through the action of the dragon—was no more, men lay down and calmly, painlessly, passed into the eternal sleep. Hell, the terrible forces of the nether world, also ceased. 'Death' and 'Hell' were cast into the lake of fire with the pressing out of the magma, in the Earth's endeavours to regain its best possible, geoidal, shape, the afterthroes of the cataclysm ceased.

The twenty-first chapter describes the new aspect of the starry sky whose bright orbs had so long been hidden from man's sight. And there was also a 'new Earth'. The sea, which had surrounded the island refuge of the apocalyptic deluge heroes, situated somewhere between the tropics, was no more. It had surged off when the satellite's pull was gone. A new Earth, new areas of dry land, had risen out of the waters under the eyes of the despairing remnants of mankind. Through the broad arch of the first rainbow after the Great Flood they stepped out into the glorious new world which lay before them. They had overcome the cataclysm now they entered upon their inheritance.

After the cataclysm, the calm, after the Deluge, Paradise! All the Earth was Paradise then—a luxuriant garden full of plants and fruits good to eat, watered with living streams sweet to drink.

A New Earth, and a New Life—thus the vision fades—and the Book of Revelations ends.

V. Consequences of the Capture of the planet Luna—a Myth of the End of Atlantis (Revelation xvii-xviii)

Throughout the Book of Revelations we find scattered fragments of a myth describing certain aspects of the capture of the planet Luna. An allusion to the short and sudden capture cataclysm is recognizable in all those passages which stress the fact that the Dragon is not really

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dead, but only conquered and held in close captivity from which he will contrive to escape So, in chapter xx

‘(1) And I saw an angel come down from heaven, having the key of the bottomless pit and a great chain in his hand (2) And he laid hold on the dragon, that old serpent, which is the Devil, and Satan, and bound him a thousand years, (3) and cast him into the bottomless pit, and shut him up, and set a seal upon him, that he should deceive the nations no more, till the thousand years should be fulfilled and after that he must be loosed a little season (8) And [he] shall go out to deceive the nations which are in the four quarters of the Earth ’

The ‘thousand years’, of course, means a period of indefinite length, in our case perhaps not less than about 250,000 years The ‘deception’ the Dragon will practise is the inevitable rise of lunar deities and lunar cults And indeed, as we have seen, many of the most powerful gods were personifications of the Moon

Another important passage is 1 7 ‘Behold, he cometh with clouds, and every eye shall see him, and they also which pierced him and all kindreds of the Earth shall wail because of him ’ It describes the great and sudden change in the climatic, and consequently in the meteorological, conditions, it also shows what an extremely powerful impression the new satellite made upon man, and even upon those godlings who, in the days of the great dragon fight, had tried to catch him with a fishing line, to put a hook through his nose, to fill his skin with barbed irons, and his head with fish spears (Job xli 1, 2, 7), and one of whom had gained renown and superiority by piercing and undoing him, and, finally, the passage tells us how the capture of Luna struck terror into those who had survived the accompanying cataclysm

Revelation 1 7 has always been regarded as the first difficult passage in the difficult Book of Revelations Now,

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however, the unknown element 'he', which it introduces so abruptly, has become clear. The Apocalypse deals in its *religious* passages with Jesus and his 'father' Yahweh, its *mythical* passages begin, as inevitably, with Luna, the 'son' of the Dragon or, since 'the Son and the Father are one', with an undifferentiated being 'he'. The next verse follows the same trend. 'I am Alpha and Omega, the beginning [of each acon] and the ending, which is [Luna], and which was [the Tertiary satellite, the chained Dragon], and which is to come [Luna as a Dragon at its breakdown, or, perhaps, Mars as a possible satellite of the Earth?], the Almighty' (that which dictates the fate of the Earth, cf. also Revelation xvii 8). Revelation i 18 voices the same thought. 'I am he that liveth [Luna], and was dead [the vanquished Tertiary monster], and, behold, I am alive for evermore, Amen, and have the keys of hell and of death' (in due time Luna will appear in its Dragon, Devil, or Satan rôle).

In Revelation xiv 8 a new theme is introduced and immediately dropped again. 'Babylon is fallen, is fallen, that great city', the verse stands out in its context like a piece of foreign matter. The theme is reintroduced in xvi 19, again without real necessity. 'and great Babylon came in remembrance before God', and in the following verse direct evidence is given that the great *polis* found its end in the waters, for 'every island fled away, and the mountains were not found'. The parallel passage in Isaiah xxi, which is significantly headed 'The burden of the desert of the sea', also mentions observatories in which the movements of the planet Luna were closely watched. 'I stand continually upon the watchtower in the daytime and I am set in my ward whole nights'.

It is in chapters xvii and xviii of Revelation that the great myth of the sudden end of 'Babylon' is put before us bodily. Just as the above quotations stand out from the

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verses of their context, so these two chapters are foreign matter unconnected with the chapters which precede and follow them

THE MYTH

AND

ITS MEANING

(xvii 1) [The angel said,] I will shew unto thee the judgment of the great whore that sitteth upon many waters (2) with whom the kings of the Earth have committed fornication, and the inhabitants of the Earth have been made drunk with the wine of her fornication (3) So he carried me away in the spirit into the wilderness and I saw a woman (4)

arrayed in purple and scarlet colour, and decked with gold and precious stones and pearls

(5) And upon her forehead was a name written, MYSTERY, BABYLON THE GREAT, THE MOTHER OF HARLOTS AND ABOMINATIONS OF THE EARTH

(xviii 1) And I saw another angel come down from heaven, having great power, and the Earth was lightened with his glory (2) And he cried mightily with a strong voice, saying, Babylon the great is fallen, is fallen (3) For all nations

and the kings of the Earth have committed fornication with her, and the merchants of the Earth are waxed rich through the abundance of her delicacies (4) And I heard another voice from heaven, saying, Come out of her, my people, that ye be not partakers of her sins, and that ye receive not of her plagues (7)

P

Once more we have before us the report of an eyewitness, but in a redacted form Nevertheless the original meaning is still clear The author of the Apocalypse talks of 'Babylon', but not of the real Babylon We are presented with a rich picture of a great maritime state which has its dominions, colonies, settlements, trading-posts everywhere Its sway is universal, its riches fabulous The author is full of deadly hate against it He wrote 'Babylon' and meant 'Rome', just as we say that there is something rotten in the state of Denmark when we want to scourge the insufficiencies of our native land This was his personal and tendentious interpretation But Rome, like Babylon, was never engulfed by the waves, nor does the description given fit either of them

The Babylon of the Apocalypse is the lost land of Atlantis

The first verse of chapter 18 is of great importance, for it mentions an accompanying circumstance to the end of Atlantis the great brightness of the newly captured planet Luna, whose gravitational pull caused the great tropical tide which buried the mid-Atlantic continent

The end of Atlantis was sudden,

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THE MYTH (contd) AND ITS MEANING (contd)

How much she hath glorified herself, and lived deliciously, so much torment and sorrow give her for she saith in her heart, I sit a queen, and am no widow, and shall see no sorrow (8) Therefore shall her plagues come in one day, death, and mourning, and famine, and she shall be utterly burned with fire (9) And the kings of the Earth shall bewail her, and lament for her, when they shall see the smoke of her burning, (10) standing afar off for the fear of her torment, saying, Alas, alas that great city Babylon, that mighty city! for in one hour is thy judgment come [ix 3 And her smoke rose up for ever and ever] (xviii 11) And the merchants of the Earth shall weep and mourn over her, for no man buyeth their merchandise any more [12-14 a list of costly wares] (15) The merchants of these things, which were made rich by her, shall stand afar off for the fear of her torment, weeping and wailing, (16) and saying, Alas, alas that great city (17) For in one hour so great riches is come to nought And every shipmaster, and all the company in ships, and sailors, and as many as trade by sea, stood afar off, (18) and cried when they saw the smoke of her burning, saying, What city is like unto this great city! (19) And they cast dust on their heads, and cried, weeping

though by no means unexpected Luna had approached very close to the Earth at certain conjunctions and its powers had played on our planet for a short time The smaller inundations thus caused must have warned many people to evacuate the endangered zones and, indeed, to leave the island continent altogether Verse 4 is very clear upon that point

The sudden end of Atlantis, in one day, or in one 'hour', is again and again insisted upon And the devastations caused by the capture of Luna are described All the world suffered when Atlantis fell Of course, the short capture cataclysm was by no means so destructive as the catastrophe of the Tertiary satellite Nevertheless there were great volcanic and seismic disturbances From afar it seemed as if the whole island or its stead was burning Observations seem to have been made both from certain points of Europe and Africa, and from ships It was a long time before these submarine volcanic eruptions subsided

The world was decidedly the poorer after the end of Atlantis The great civilizing influences were at an end, and the colonies which remained struggled hard to retain their standards Atlantean colonial rulers and Atlanteans who had escaped to the circum-Atlantic continents built

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THE MYTH (contd) AND ITS MEANING (contd)

and wailing, saying, Alas, alas that great city, wherein were made rich all that had ships in the sea by reason of her costliness! for in one hour is she made desolate (21) And a mighty angel took up a stone like a great millstone, and cast it into the sea, saying, Thus with violence shall that great city Babylon be thrown down, and shall be found no more at all

up weak civilizations which eventually became transformed, and often degraded, when the rising natives took the power out of the feeble hands of the descendants of the Atlantean king caste

Verse 21 is another most significant passage it describes nothing less than the full-moon mode of the capture of Luna, and its chief consequence, the loss of Atlantis. The graphic picture given is the ocean-level rose as if a huge millstone (the round white disk of the Moon) had been thrown

into the sea. Perhaps we may infer from this some idea as to the standpoint of the observer and the time of the capture. Viewed from the reporter's refuge somewhere in Western Europe or Africa, the actual capture probably took place rather near the western horizon, and so, for him, in the morning hours, he was therefore quite right in likening the sudden approach and enlargement of Luna, her disappearance below the western sea-rim owing to the Earth's rotation, and the Capture Flood which became powerfully apparent now, to effects caused by the throwing of a big stone from heaven into the sea. The rising waters of the Capture Flood submerged Atlantis, and bold sailors, though they ventured out far to the west, could find no trace of it any more.

From the foregoing pages it will have become clear that we can disentangle two distinct main threads from the cosmic passages of the Revelation of John: the great body of the Tertiary breakdown myth, chapters 1-xii, with its parallel version, chapters xiii-xvi and xix-xx, either of these two versions being completed by chapters xx1 and xxii, 1-5, and the Luna capture myth, chapters xvii and xviii.

Of course, this is only a very rough separation, and it will probably require the lifework of a thorough scholar of apocalyptic literature in general, and of the Revelation of John in particular, to unravel the different parts

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dovetailed into one another. The matter of Genesis, for instance, has been separated into passages coming from at least three different sources, out of which material some editor compiled the present first book of our Bible.

The last book of our Bible has come into existence in much the same way. The Revelation of John is a complex work. The sorting of the separate original threads of a compilation necessitates a great deal of very careful source-study. Real source-study, moreover, is practically impossible in connection with Revelation. The actual sources which our author has laid under contribution are spent. His work is the last precious bucketful of a well which will probably remain for ever dry. Therefore we must approach the problem from another angle.

The Book of Revelations is not the only example of apocalyptic literature, it is the most important work, unique in length and detail, of a great class of writings whose chief characteristic is a framework of dark cosmological passages filled with equally obscure, and generally equally ill-matched, eschatological speculations.

Religious literature tells us of the acts of God upon our Earth and among men. In the prophetic works God is represented as acting indirectly, through human agency, whereas the apocalyptician represents him as acting directly, through personal intervention. The prophet reveals a sublimated idea of deity, the apocalyptician paints an essentially mythological picture—he is much more expressive.

Another important trait of apocalyptic literature, and one which separates it fundamentally from prophetic utterances, is that, while a prophet is above all a speaker, the apocalyptician is chiefly a writer. This may almost certainly be taken as indicative of their sources: the prophet is moved to his utterances by direct inspiration or contemplation, the apocalyptician draws from traditional

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lore, compiles his works from written records or oral reports

It is surely significant that John, and also Ezekiel, the other great Biblical apocalyptician, definitely refer to books from which they drew their cosmological passages. And this again is a peculiar trait: the prophet gives his visions under his own name, the apocalyptician, on the other hand, either refers to some 'book', or, mentioning no source at all, publishes his writings under a pseudonym, sometimes under the name of one of the great heroes or heroines of his nation's past. A great number of such pseudepigrapha have come down to us, we need mention only the Books of Noah, Enoch, Zephaniah, Ezra, and the Sibylline Oracles, while the apocalyptic passages in Isaiah, Jeremiah, and Zechariah are almost certainly pseudepigraphic interpolations.

Taking everything into consideration, we get the impression that the apocalypticians did not invent the cosmological skeleton of their stories, but based them on popular traditions of great antiquity. Their descriptions are too grand, too lofty, too logical, too clear, to be merely the outcome of imagination. They were myths, treasured, probably, by little circles of the initiated. They were not necessarily Jewish myths. We know that the Jews systematically discountenanced cosmological traditions and tried to sublime and elevate such passages of the coarse primitive myths as they could not do without. The writer of Revelation must have come into possession of such esoteric knowledge—on Patmos, perhaps, whose geographical position is thoroughly favourable for Babylonian, Egyptian, and Greek thought to arrive and find shelter there, besides, many of the little Aegean islands are known to have had mysteries, secret societies professing occult lore. However John got to know the great myths, he almost certainly was not introduced to the core of their

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meaning by a mystagogue, provided such a personage knew their real value—which is to be doubted. But John had the conviction that those myths contained a key to many of the mysteries of the past and the future, and therefore also of the present. He freely adapted the sacred teaching he had found, supercharged it with historical and religious matter, in short attributed to it a meaning very different from its original meaning. But the material was too foreign to lend itself easily and entirely to this experiment—again and again we feel that the borrowed cosmological background looms gigantic and other-worldly behind the glowing picture of his own which he has painted on it. Those passages ‘fall’ out of the context—they are in it, but not of it.

The impression which almost every student of the Apocalypse gets is that the cosmological background is much more interesting and difficult than the eschatological foreground.

This struggle of the author with his uncouth material lends a certain aspect of unevenness to the Book of Revelations. The presence of passages inconsistent with the tone and character of the whole has been taken by many scholars as evidence against the literary unity of the work. But from the foregoing considerations the single authorship seems to be again admissible and acceptable. The question is of minor importance. Considering the plurality of sources as indicated above, however, it is really remarkable how strong an impression of unity is given, on the whole. Revelation may, to all intents and purposes, be likened to Genesis in this respect.

We do not find apocalypses, that is, cosmological myths supercharged with eschatological meaning, in other religious systems. Apparently they are a peculiar Semitic or Jewish trait. This is the influence of the sublimation, which was in no religious system carried to the pitch it reached

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in Mosaism, and therefore in Christianity. It is probably this apocalyptic camouflage which has allowed some of the Jewish myths to come down to us in the canon.

The races of the world have a wealth of cosmological myths. With them the myths in Revelation will have to be compared to determine their exact meaning and to discover the different threads.

In his endeavours to interpret the ancient cosmological myths eschatologically, the writer of Revelation had to use a highly artificial apparatus, to give them the semblance of truth he had to introduce a number of hints at historical persons. It is from the latter that we can infer when the work was written, or, rather, when the old material was edited in the new form.

The most remarkable trait of this artificial treatment is the insistence on heptads. There are not only seven churches but a complete vocabulary of things that come by sevens: angels, bowls or vials, candlesticks, crowns, eyes, horns, kings, seals, thunders, and what not, the great red dragon and the beast that rose up out of the sea have seven heads, seven thousand were killed by a great earthquake, and so on. All these figures—the churches, although an arbitrary selection, perhaps excluded—are, of course, quite artificial. The author seems to have been completely under the spell of the magical number seven. As to fractions, he preferred 'one third'.

Another peculiarity is that the writer, while mentioning many of the grotesque agents of the great cataclysm, never describes them exactly but only hints at their shape and appearance or the noise they make: something appeared in heaven 'like unto' the Son of man, 'similar to' beasts, as a lion, a calf, a man, a flying eagle, or again 'like unto' a leopard, 'like, as it were,' a sea of glass mingled with fire, and voices were heard 'as it were' of a trumpet, or again of many waters, or, repeatedly, 'like' thunder. All these are

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obviously attempts to interpret the expressions in his original—which in itself was, of course, more a poetical than a scientific report

But through all the tangle of oriental religious imagery there loom large the ancient myths which no eschatological twisting could deface the myths of the battles of the angels, the fight with the dragon, the conquest of a Tīāmat-like chaos monster and its brood, and the loss of Atlantis. The great destruction is still correctly described as beginning and ending with a terrific hail catastrophe. The hail has no esoteric meaning at all—the author of Revelation just took it, together with a great many similar passages, straight from his original, thus rendering us a great service. Once the cataclysm has fairly started, climax is out-topped by climax. It is a peculiar trait of the Apocalypse that all disasters, however terrible they may be, are only partial, the final doom is postponed again and again—and even that is not the general end of all things which we are led to expect. The cosmic catastrophe over, a new Earth rises out of the waters and a new heaven extends its blue vault above.

The religious teaching of the Book of Revelations is obvious. The times are 'bad' and must 'quickly' come to an end. May, therefore, all repent before it is too late. But the discussion of theological points does not fall within the compass of this book.

This is all we can say here about the cryptic Book of Revelations. We believe that we have been able to give a thoroughly satisfactory explanation of the cosmological background of that great book. What is more, we feel guiltless, on the one hand, of having shaped our theory to fit the myth of John, or, on the other hand, of having strained the details of this strange report to make it fit into our world picture. The Cosmic Ice Theory was conceived a very long time before it was noticed that there

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were many descriptions in Biblical and other mythological literature which were vividly illustrative of the deductions made. These parallels are too many and too close to be regarded as merely accidental.

The latest fruit of speculation on the origin and meaning of the Book of Revelations, therefore, is that its author drew from sources whose subject-matter had, ultimately, come down right from the catastrophic end of the Tertiary Age and the no less catastrophic beginning of our own Age of Luna. The apocalyptician projected the events of the dim past into the indefinitely 'near' future, and did so rightly; therefore both the preterists and the futurists among the scholars are correct in their views—if they base their arguments on our Theory.

The Bible no longer ends with a great question-mark, scrawled in despair after a series of hopeless enigmas. It finishes with as clear a picture of the beginning and end of things as that with which it starts. May the solution offered here promote an interest in Bible study, attempted from new angles.

The Creation of Man

From the earliest ages man has wondered how the universe round him came into being. He did not take the phenomena of the world for granted, he refused to believe that things are as they are, because they are, he had, from the dawn of his humanity, a clear conception of growth, creation, evolution.

Man's conception of the creation of the physical world has been treated at large in an earlier chapter. It is enough to repeat that there are two main branches of the lore of the coming into existence of our Earth: the mythical creation, in which it is fashioned out of the body of a vanquished cosmic monster, and the magical creation, in which it is forced to emerge out of the waters into which it has been plunged. We have learnt that each of these creation reports is based on direct observation.

Man could see with his own eyes the coming into existence of the Earth as we know it now, and he could see it as the outcome of the cosmic catastrophe, but it was much more difficult to account for the presence of the organic life which fills the Earth. For there was no recording brain when plants first sprouted, when animals first appeared, and when man slowly rose to the verge of conscious humanity.

Most myths evade this difficulty by not beginning at the beginning. Among these practically all of the vast number of deluge myths must be reckoned. All that lives and moves and has being is destroyed in a great cataclysm—

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only the deluge hero and his companions are saved, and with them the animals (sometimes also seeds or even plants) they have providentially taken with them into their vessel or on to their mountain refuge. The pick of the old Earth is thus preserved and given a new lease of life under new conditions.

Before we go on we shall try to classify the possibilities of the relationships between the deluge survivors, as they appear in the myths and as they may actually have happened. The survivors may be

- 1 a young man and a young woman (or several of either sex),
- 2 a young man and an old woman,
- 3 an old man and a young woman, or
- 4 an old man and an old woman,

'young' and 'old' meaning especially 'able, or not able, to beget offspring'

Furthermore there may be

- 5 a man alone (or several men), or
- 6 a woman alone (or several women), she (they) may or may not be pregnant

The group of ark and peak myths mentioned in an earlier chapter (Noah type) belongs to the first class of survivor myths. It is by far the most frequent and we find it everywhere in the world.

The second class is hardly represented among the myths. Unless the young man could find a mate outside his refuge, there was no chance of himself or his elderly companion being remembered, since there could be no children.

The fate of the survivors of the other classes was closely related to the above tragedy, unless other accidental circumstances altered the conditions fundamentally.

The third class of survivors, an old man and a young woman, occurs rather frequently. The old man, of course,

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being of an older generation, often appears as a deity, sometimes even in the shape of an animal, evidently the totem of the man-god. Thus the Cashinaua Indians of Western Brazil say, in one of their deluge myths: 'At that time, when heaven and Earth changed their places, when the heavens burst and fell down on the Earth, all men were killed, nothing that had life remained. In heaven, however, was a woman who was big with child. She was killed by lightning and fell down on the Earth. There a crab saw her lying, and seeing her condition he cut open the dead woman's body. Thus he saved her children, twins, a boy and a girl. The crab's wife nursed them and brought them up. When they were grown to that age they married. From those two all the Cashinaua are descended.'

This story is one of the most significant that the mythologist knows. If we put 'dying' (in labour) instead of 'dead', and 'aged couple of survivors' (class 4) instead of the 'crab' (or crayfish) and his 'wife', it becomes still clearer. 'Heaven' stands for the antediluvian world, which, in the raging cataclysm, seemed to change places with heaven, as we are told in the myth. The great surgical skill of the old crayfish totem bearer is remarkable, the reports of travellers contain nothing which might indicate the presence of real medical knowledge among those jungle-dwellers of the upper reaches of the Amazon, and I do not think that they ever perform the Caesarean operation nowadays. Very likely the man whose totem was a crab—a *salt-water* animal—was a surviving member of an Atlantean colony.

There are several myths of the Cashinaua type. The Hurons, for instance, tell in their deluge and creation myth of a woman big with child who by some mischance fell from heaven. Loons, seeing her fall, caught her and put her on the back of a tortoise, which later magically re-created the Earth out of a lump of mud fetched up from

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the bottom of the universal waste of waters. When her time came she was delivered of twins. One of the children was born in the ordinary way, but the other one forced his way through his mother's side, and so caused her death. This is almost a complete parallel to the above story.

The Cashinawau motif also appears—with a curious transposition—in the second myth of the creation of the sexes in the Bible, Genesis ii. 21-22. Here again we find the old man skilled in surgery, the sole male survivor from another world. With him was saved a young woman, big with child. He performed the Caesarean operation on her, she survived, and in due time became the mother-wife of her son-husband.

Such, at least, may have been the original version of that lost myth which some Jewish redactor perverted to make it explain the attraction of the sexes and, perhaps, marriage, monogamy, and the subjection of women. If man lacked a rib on one side the tale might be classified as an etiological myth, as a myth of inferior quality, all etiological myths being invented or constructed. As the story stands it is ridiculous, and makes the mythologist shudder. The creation of a woman out of a rib—of all things—is not even magical, blood or spittle, flesh, or even some other bone would have been magically much more appropriate.

By saying that Adam was the son of Eve, not Eve the daughter of Adam (at least, not in the sense of Genesis ii. 21-22), we can explain things simply and give them the appearance of possibility. The perverted Eve-Adam myth has many parallels, as, for instance, the birth of Pallas Athene. The 'virgin birth' myth of Jesus, on the other hand, is as original as it is beautiful.

The myth of the birth of a child—always of female sex—out of a man is found in different parts of the world. All parts of the body, except the abdomen, are mentioned

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The Greeks say that Pallas came out of the head of her father, the Aryan Indians, that Kali leapt out of the eye of Durga, the Cato Indians of California, that the first woman came out of a split thigh, the Binna, in the Central parts of the Malay Peninsula, that they are descended from a boy and a girl who were born out of their deluge heroine's right and left thighs

The fourth class of survivors is a couple too old to expect children (or a younger couple who want to skip the slow business of begetting, bearing, and rearing children to form the breeding stock of a new nation) Natural means being out of the question, they had to resort to magical. So Deukalion, son of Prometheus and ancestor of the Hellenes, and his wife Pyrrha saved themselves in a ship at the time when all the rest of mankind was drowned in the waters of the Great Flood. The Delphic Oracle, when appealed to regarding the best way to re-people the Earth, commanded them to cover their faces and to throw the bones of the Great Mother behind them. For a while they hesitated, not grasping the tenor of the oracle. But then they picked up stones, the bones of Mother Earth, and threw them as they had been instructed. All the stones thrown by Deukalion turned into men, and all the stones thrown by Pyrrha into women. Thus the Earth was re-peopled.

One might be led to suppose that this myth was an invented one, based on the similarity of the Greek words *laas*, stones, and *laos*, people. Indeed, this sounds very much like a late addition by a would-be clever commentator. Though the science of etymology does not at present recognize any connection between *laas*, a stone, and *laos*, a people, there seems to us to be as much relationship between the two words as there is between Latin *humus*, the soil, and *homo*, a man, and Hebrew *'adāmāh*, loam, and *'ādām*, man.

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However, a clumsy invention is quite out of the question. The Deukalion type myth is so singular that it immediately captures our full attention. Evidently it tells of the re-creation of humanity by magical means. And it cannot be merely invented, because it has some very important parallels.

Thus the Makusis of British Guiana say that only one man escaped in his boat from the deluge which the good god Makunaima sent to destroy the evil demon Epel. To re-people the Earth he threw stones behind him, and these turned into men and women. The Caribs say that their arch-ancestor sowed the soil with stones which grew up into men and women. The Arawakan tribe of the Mairapuré in Guiana say that the man and woman who had taken refuge on a high peak gathered the hard fruits of the Ita palm (*Mauritia flexuosa*) and threw them behind them over their heads. The stony kernels thrown by the man turned into men, and the seeds cast by the woman turned into women.

The Lithuanians say that the man and woman who had survived the Great Flood were too old to beget children and were very sad that their part of the good new Earth should remain unpeopled. Then the god Pramzimas, Father of Heaven, gave them the advice, to jump nine times over the bones of the Earth. They did so, and each time they jumped over the rocks a couple, man and woman, arose, and these became the ancestors of the Lithuanians.

These peculiar myths describe the magical re-creation of mankind. But why should stones be chosen as the magical material, and why should they, when thrown *backwards*, turn into men and women?

They certainly never did! But the thought that underlies the magical action is quite correct. A myth of the Tlinkit Indians of Alaska is helpful. 'After the deluge the Raven, a

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demiurge, changed all men and animals into *stones* ' The Washoan Indians of California say that 'the Great Spirit took the builders of a great temple and refuge-tower, changed them into *boulders*, and hurled them into clefts and caves' The Zuñi say 'A boy and a girl were thrown into the waters of the Great Flood to appease their anger. They changed into two great *rocks* which were henceforth called Father and Mother ' We find quite a number of similar myths

The reasoning of the deluge survivors appears to have been something like this. The multitude of men that lived before the cataclysm is no more, the land which has risen out of the waters is full of unfamiliar boulders, evidently those are our unfortunate brothers and sisters who have been transformed by the wrath of the godhead. If we could eliminate the time between their being men and their becoming stones, the stones would turn into men again. The Deluge lies behind us, let us therefore throw the stones behind us, thus breaking the spell which has been cast over our fellows!

The appearance of other survivors was no doubt regarded as a triumph of the method employed.

Sometimes, of course, these meetings may have resulted in bloody conflict. The Greek myth of Cadmus relates that after the conquest of a dragon (the Tertiary cataclysm, though much obscured), which had killed all his companions, he gathered its 'teeth' (meteoric material from the 'mouth' of the dragon, the open sickle of the satellite) and flung them broadcast over the land (literally the ploughed land, the earth which was torn and furrowed by cosmic missiles). A crop of armed men grew up—calling themselves Sparti, or the Sown Ones—who began to fight one another. All were killed with the exception of five who became the ancestors of the Thebans.

The myths which tell of the transformation of men into

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stones are naturally followed by those in which mankind is changed into loam. Thus the Knisteneaux or Cice Indians believe that the flesh of those who perished in the waters of the Deluge was changed into red pipe-clay. Similar myths or echoes of myths are found in the tales of almost every nation.

The enormous and unfamiliar loess deposits, which must have formed such a striking feature of the new Earth, were regarded by the survivors as the dissolved bodies of their unfortunate brothers and sisters. But, if man's body could be transformed into clay, then surely that clay could be re-transformed into the human shape, that is to say, man could be magically re-created! A very great number of myths show the world-wide acceptance of that belief.

The classical example of the magical re-creation of mankind by kneading men's images out of the clay into which they had been changed is, of course, the Biblical one, Genesis ii. 7. 'And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life, and man became a living soul.' An earlier passage, Genesis i. 27, says 'God created man in his own image, male and female created he them.' 'The first female being,' we read in the myths of the Jews, 'who was fashioned out of loam at the same time as Adam, was called Lilith. But she was intractable and would not subordinate herself to the will of her spouse, saying "Are we not both made of the same substance?"' This was not a bit to the liking of Adam, and he bitterly complained of his wife's stubbornness to his maker. So he was separated from her, and Lilith became a vampire which preyed upon the offspring that Adam had from his second helpmeet, Eve. This is how Eve was created. God sawed Adam in two. With her, as she was flesh of his flesh and bone of his bone, he got on very well.'

The sawing or cutting or splitting into two appears in a considerable number of myths, it has a certain similarity

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to the operations mentioned in class 3 of the survivor myths

In Babylonian mythology the creation of man appears as follows 'When Bel saw that the Earth [after the sinking of the waters] was a barren waste, he commanded one of his fellow deities to behead him and to mix the clay of the fields with the quickening stream of his life-blood and to create [knead] the shapes of man and of the [higher] animals out of the life-charged paste thus obtained' The Bel of Berossus stands much higher than the Yahweh of Moses, for he gives his life that man may have being This theme of the supreme sacrifice is unique, only Christianity provides a distant kind of parallel

The Shawnee Indians have the following myth 'One old woman alone survived the deluge Her sadness because she was doomed to die a lonely death as the last of her tribe was lightened by a heavenly messenger who bade her "Consider, how man was first created!" So she kneaded a great number of human shapes out of clay, but to her sorrow they remained lifeless puppets Hearing her complaints, the divine messenger again prompted her "Consider, how the Great Spirit animated the clay forms!" She understood the allusion and breathed into the nostrils of her mannikins This quickened them at once Thus the Redskins came into being, and that is why the Shawnees still revere the Old Grandmother as their ancestress'

The Salinan Indians say that the Eagle made a man out of mud which a diving-bird had brought up from the bottom of the deluge waters

The Greek epic poet Asius says that the Earth threw up a man of its own accord, that there might be a race of men This Earth-born man was Pelasgus, the ancestor of the original inhabitants of Greece

Other Indian myths aver that the forefathers of different tribes were made out of bones found by the Coyote or an-

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other demurge figure The Chimarko Indians of California say that their ancestor who survived the Great Flood found a fragment of bone in his canoe He kept it carefully, and after a time it changed into a woman whom he married Another myth of the same tribe tells how the Frog found the rib of a person who had been drowned This rib developed into a girl whom he married when she had grown up, and by whom he had many children

The very logical bone myth occurs rather frequently Other tribes say that man was created out of the feathers of powerful or clever birds, out of wood, and so on

As we have said, the creation of man out of clay is a magical action After the Great Flood men were found no more The hills and valleys were covered with a fine loam, the loess, a legacy of the dead satellite, which was recognized as being a new, unfamiliar thing Its brownish or reddish colour was taken as evidence that it was the material into which the dead had been transformed Consequently, if the Earth was to be peopled again, the procedure must be reversed The saying at that time was not, 'Dust thou art, and to dust thou shalt return,' but 'Dust thou becamest and out of that dust wilt thou be born again'

That clay puppets can under no circumstances become living beings does not trouble the mythologist For him it is enough to recognize the will of the survivors to re-people the Earth by a very logical magical action The actual re-peopling was done by the survivors themselves, by the groups that were saved as groups, and the groups that formed when individual survivors joined others whom they met in their wanderings through the strange new world

The fifth class of myths is that which relates that a man alone, or several men, were saved, but no woman Some reports declare, or at least hint, that in their endeavours to propagate their race they tried sodomitical unions

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with one another, with animals, and even with inanimate objects—most probably, rudely fashioned female shapes. The animals mentioned as mates of the ancestors in many myths, however, were certainly only tribal totems, and mention of them implies that the ancestor found a wife not belonging to his own race or clan. So the Indians of the Yukon say that their ancestor married a wolf, the Tepanecas, that their forefather mated with a dog, while the Cañari of Peru aver that they are descended from the union of the founder of their tribe with an ara.

The sixth class of myths tells of a deluge heroine. For her, too, the finding of a mate was imperative for the founding of a tribe. We shall pass over the great number of sodomitical stories, the unions with serpents (a very widespread story), he-goats, birds (Leda), or with symbolical things, fire, wind, rain, and so on. The tale of the 'angel' marriages of Genesis vi 2 does not belong to this group of grosser myths, the 'sons of God' are only men from another body of deluge survivors, probably of superior race, who, roving the postdiluvian jungles, found mates in the women of a tribe that called itself 'the family of men'.

The more interesting section of the deluge-heroine myths is that which tells of the salvation of a woman big with child. 'Downward through the evening twilight, in the days that are forgotten, in the unremembered ages, from the full moon [a capture flood heroine] fell Nokomis. On the Muskoday, the meadow, far Nokomis bore a daughter. By the shores of Gitche Gumee stood the wigwam of Nokomis.' Thus Longfellow transmits the old Algonkian myth. The Cree Indians call their heroine Kwap-tahw. A bird, to whose feet she clung, carried her over the waters to the top of a high cliff, where she bore twins, a son and a daughter. Their descendants re-peopled the Earth. (The War-Eagle, an antediluvian, is mentioned as their

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father Kwaptahw means 'virgin', but stands here, more probably, for 'woman who has no husband, in this world') In Greek mythology the birth of Apollo shows similar traits, and the myth also appears in Revelation xii, tacked on to another tale

The Mandayas who inhabit Mindanao, one of the Philippine Islands, say that many generations ago a great flood drowned all people Only one woman who was pregnant escaped As there was no hope of finding a husband, she prayed that her child might be a boy Her prayer was answered When he grew up he took his mother to wife, and from this union all the Mandayas are descended

The Toradjas of Central Celebes say that a pregnant woman escaped the Great Flood She bore a son through whom she became the ancestress of the Toradjas

Stories of son-and-mother and brother-and-sister marriages are found in many parts of the world Some narrators evidently have moral qualms, and expressly state that such unions were only allowed in long-past times of dire need when, but for this expedient, the race would have died out They frequently stress that this mating was not a matter of love, and in many cases even give details about the precautions taken to prevent the rise of intimate feelings

Other myths of deluge heroines were mentioned in an earlier paragraph of this chapter

This review by no means exhausts the very numerous and varied myths relating to the creation of man and the re-peopleing of the Earth It does not even touch upon a very important trait of many myths, the fierce fights for the possession of females Even in the Bible the first murder committed is one of jealousy Genesis iv wishes to make out that Abel had been killed owing to some squabble about a sacrificial offering But the Talmud (Midrash, Bereshith, Rabbah, 20) says bluntly 'Together with Abel a twin sister

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had been born Cain said "I mean to have her for my wife, for I am the firstborn " But Abel replied "She was intended for me, for we were born at the same time " So Cain rose up against Abel, his brother, and slew him ' Cain then took his sister to wife and, to enjoy the coveted prize in safety, left the paternal compound (Genesis iv 16-17), thus becoming the first explorer and colonizer

'The proper study of mankind is man ' What an amount of deep thought our forefathers have given to the enigma of our origin! And yet not one of them, in any part of the world, went farther back in his speculations than to the re-creation of mankind at the end of the great Tertiary cataclysm Are we of the twentieth century able to furnish a theory that is fundamentally better than theirs? Certainly our speculations are far less poetical

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THE foregoing myths may be very interesting and amusing, and they certainly contain a surprising amount of truth and good observation, but they do not answer the question Where does man come from? Nor indeed can this chapter offer any solution to this problem, it can only make it more difficult by introducing into it a peculiar element the influence of the cataclysms. This influence is twofold biologically, urging man generally upwards, culturally, throwing him down repeatedly from the heights he has reached.

Before we enter upon a discussion of these points we shall review, very briefly, what man thinks he knows about man. The 'creation' of man out of stones or bones was only possible in the pre-scientific age, although we are still troubled with it in Scripture lessons. The most important idea, conceived and elaborated in the nineteenth century, was that of the ascent of man, from the one-cell stage to his present position at the top of creation. Nowadays the derivation of man from the general animal stock is no longer taken for granted, the views of scientists tend rather to the independent ascent of a special human stock. The anthropoid apes, formerly brought into rather close relationship with man, and partly even regarded as the main stem from which man branched off at some not necessarily very distant time, are now regarded as a sucker that sprung from the root at a very remote time. So much, at least, seems to be accepted at the present time.

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The most eminent textbooks on the evolution of man seem to put the rise of man proper into the Pleistocene Period, that is to say, at the end of the Tertiary Age, some 250,000 years ago. The separation into anthropoids and pithecoids is believed to have taken place in the Miocene Period, some 1,000,000 years ago.

This time, however, is surely very much too short. Man must have been fully man, an intelligent observer of nature, a skilled builder of ships and houses, a political being, by the end of the Tertiary Age, the time of the breakdown of the predecessor of Luna. This means that the ascent of a definitely human stock must have taken place in a much earlier period, the Cretaceous Age.

This statement apparently has the verdict of geology against it, for only rarely have humanoid remains been discovered in Oligocene and Miocene strata, and even in Pliocene and Pleistocene deposits the number of finds is small. Nevertheless the absence of human entries in the record of the rocks underlying the Eocene formation is easily explained. Man was too clever to go into those districts where, and at a time when, fossilization was possible, that is, during the 'Stationary Period' of the satellite and the time immediately preceding and succeeding it. At other times his flesh decayed and his bones were detrited (of course, some resisting particles may be embedded somewhere and come to light at some time or other, but even man's teeth are very soft, it must be remembered). None of the human remains which have been found up till now are fossils in the strict sense of the word, for they are not encased in real rock, and the bones have not become truly petrified, to say nothing of the flesh, no vestige of which has ever been found, they are, on the contrary, brittle and decayed and embedded only in gravel, rubble, or loam, thus distinctly showing that the men to whom they belonged perished in the Great Flood which ended the Tertiary Age, and were carried, in

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a semi-putrid state, to the place where we find them, deposited, and covered with the detritus with which the diluvial waves were thick. Pithecoïd remains are as rare as anthropoid, for apes do not live on the shore, but in woods, and where could trees be found at the great fossilization period but far, very far away from the oscillating, sedimenting, lastingly embedding tide-hills? Besides, apes fear the water. For the same reason geology finds that in every age of the Earth the strata always contain very many more aquatic animals, or animals that feed on such, than pure land types.

To recapitulate (1) We cannot find human remains embedded in hard rock, for ecological reasons in the Miocene, Oligocene, and Eocene periods, the central and chief parts of the Tertiary Age, man settled far away, at a safe distance from the oscillating tide-hills in whose ebb-districts strata were laid up and fossils lastingly embedded. (2) Whatever was deposited in the very long astatic acon intervening between the end of the Cretaceous Age (the capture of the Tertiary satellite) and the beginning of sedimentation, had entirely decayed and was washed up again and detrited by the tide-hills. (3) Only the scanty remains semi-permanently embedded in rubble, gravel, and loess during the diluvial period, are to be found. The same refers, in principle, to the Cretaceous Age as well, and not only to man but also to all forms of life.

Such an extension and modification of the standpoint of science in the question of the evolution of man explains very well the 'missing links' by showing that what is really missing is long lengths of a chain of development of which only a few links were saved. The history of the evolution of life on this planet is a thick volume, consisting of blank leaves. Only here and there, once every hundred pages or so, do we find a sentence, a word, a few disjointed letters or smudges—such are the records of the rocks.

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However, the unveiling of the history of the evolution of man is already being attempted not only from the scanty geological evidence but also from biological evidence, from the evidence of the great number of vestigial structures on man's body, from the standpoint of psychology, and others. But so far no investigator seems to have thought of taking the evidence of the *myths* into consideration. Though the brains and the brainpans of Tertiary Man have not come down to us, the work of those brains has. If we regard myths as 'fossil history', as the records of actual experiences, and not merely as the outcome of fanciful reasoning—then man must have actually lived at the time of the saurians, he must not only have seen the Tertiary cataclysm, he must also remember things which happened many millions of years earlier. This is certainly a bold statement but it only puts man's mental fossil material, the memories of former things, on the same footing as his somatic fossil material, the rudiments, vestigial organs, and atavisms, the ballast of bygone ages when these things were still in active use.

The great deluge myths and tales of the time of stress when the Earth was 'created' describe man's triumph over the unchained cosmic powers. And every triumph over difficulties is less a triumph of the body, than a triumph of the mind. And this is where we must introduce a new element into the evolution of man—the influence of the satellitic catastrophes. The effect of this influence is threefold: the elimination of the unfit through adverse climatic and economic conditions, the mobilization of biological forces, and the awakening of the powers of the mind. To put this thesis in brief: Man is what the Moons have made him.

The ever-present human stock in the animal kingdom responded to the influences at work around it. While the cataclysms lopped off those animal stocks which were unable to stand the strain (chiefly the aquatic and semi-aquatic

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animals), they furthered, blindly, of course, the rise of the purely land-dwelling birds and mammalia, and especially that of reasoning man

The human stock must be regarded as the chief and oldest limb of the tree of animal life. Man, in his embryonic, immature, and grown-up stages has an enormous number of vestigial organs. No other animal strain (except some apes) reaches this number. This means that man in his short life, and especially in his very short embryonic life, briefly recapitulates the history of his evolution. So much has been taught before. But man did not rise to manhood of his own accord: he was urged to assume his shape, and to develop his capacities, by the dying satellites of our planet.

At the age of the greatest difficulty for him, the time immediately before, during, and directly after the breakdown of the satellite, mankind was separated into two main groups: the inhabitants of the tropical refuges, and of the fringes of the post-stationary progressive girdle-tide.

The former experienced, on the whole, a better climate and therefore better economic conditions, less tidal changes, and no deluge. They entered the calm asatellitic age of general development and evolution with an appreciable amount of culture, which they were able to increase very rapidly. That this is no idle speculation is proved by the fact that all the higher races of mankind, the Aztecs, the Incas, the Aryans, the Chinese, to mention only a few, have, according to their myths, and according to the finds of archaeology, descended from hills and highlands, their deluge asylums.

But the fringe-dwellers, who lived between the northern and southern ice-caps and the shores of the girdle-tide, experienced an adverse climate, lived upon the spoils of the shore, were subject to great tidal changes, and underwent the terrors of the Great Flood, saving, generally,

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nothing but their wretched lives. The Deluge drove them into the poor lands, and in these districts there ensued no perpetual spring. They entered into the new age destitute of tools, helpless and hopeless. Typical examples are the Eskimos, many North Siberian tribes, and, in the south, the Patagonians, the Bushmen, the aborigines of Australia, and, probably, many negro tribes.

The fringe-dwellers experienced the Great Flood most of all. But the inhabitants of subtropical refuges may have suffered terribly from the waters of the girdle-tide ebbing off from the tropics and surging back again from the poles. Some of these tribes may have been overwhelmed entirely and washed out of existence, individual members or small groups of others may have escaped to peaks, on rafts, or in arks. All who escaped, however, had lost everything above all, their tools.

Man is master over matter and time because of his tools. Things take shape, quickly, because our tools supplement our wishes. Progress in the efficiency of tools improves the standard of the articles we make and saves time. Tools gave man the leisure to turn to those things which need dispassionate thought. The machine will eventually free us from all drudgery.

Without efficient tools, man sinks to the level of the savage, without any tools at all, he would descend to the level of the beasts. It is not difficult, therefore, to picture the consequences of a tidal wave surging over an island refuge or over the littoral belts. A small group of a tribe that had reached a high state of culture, having had but a limited area, is saved—but in a few moments their culture has been destroyed, and the survivors hurled down to the bottom rung of the ladder of technical skill. And tools cannot be replaced quickly, the greater their efficiency, the more difficult their replacement becomes. He who only uses a pounding or hurling stone, finds the land littered

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with tools, but he who, while perhaps also using stone implements, has specialized them into hammers, axes, knives, chisels, arrowheads, spearheads, saws, scrapers, borers, and so on, and has depended on special kinds of stone, flint, or obsidian, will find it extremely difficult to replace even the simplest of his tools, the hammer, he is flung lower than his fellow mortal who tackles all problems with a handy lump of rock. Nor can the thought of replacing lost tools be the most pressing one in the survivors' minds. Food comes first, and shelter, and in the deluge-swept wastes immediately after the cataclysm either must have been very difficult to find. Before life became easier again all the prediluvial craftsmen may already have died, or lack of practice have made their hands clumsy. And the clumsy style may have become the only style with succeeding generations. Besides, the careless time of perpetual spring which followed the Tertiary cataclysm may have made many tribes indolent and disinclined to improve their standard.

Many myths tell of tools having been saved more or less accidentally (quite apart from the elaborate ark myths, some of which even describe the salvage of a lot of quite unnecessary odds and ends). In various North American Indian myths fire-drills are mentioned, in others stone implements, pots, bows, jewellery are reported to have been saved. Some myths say that the people who had escaped on rafts, and had saved certain personal belongings, believed that the waters would never subside unless they sacrificed something from their store. Such saved tools were frequently stolen from their owners, probably because of their efficiency, though the myths usually stress the 'magical' properties of the 'other-worldly' implements.

At the religious ceremony Okecpa of the Numangkake or Mandan Indians, a medicine-man dressed to represent Numangmachana, the only survivor of a mythical white

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race, took a levy of knives and other cutting implements to sacrifice them to the waters. It was believed that if this was not done every year at the time when the willows are in leaf the Deluge would come again. The dove of their deluge hero had brought a willow twig when the waters subsided.

The idea of the loss of tools and the consequent loss of cultural attainments does not seem to be given prominence in textbooks dealing with the rise and progress of man. And yet it is one that, once conceived, cannot be dropped again. I am a man of some education, proficient in a few disciplines, a dabbler in many others, I am something of a Jack-of-all-trades. I can make things out of wood, I have made things out of metal. But the success of my hobbies must really be put down to my tools and to the materials upon which I work with them, and my knowledge depends almost entirely upon my books, to which I have to refer continually. If I imagine that a great and sudden cataclysm overtakes this busy hive of London, or the swarming canyons of New York—with the villages and hamlets of England, the backwood settlements of America—and an unimaginably great and powerful tidal wave sweeps me and a few of my neighbours, a sorry crew with nothing to call our own except the shirts on our backs, to some strange place scoured clean by the raging waters—where is now our learning, our technical skill, our standard of culture? Though I may still remember a number of mathematical formulae, historical data, and general facts—of what value are they to me? Though I can make things out of wood and metal, unless I have the materials and the necessary tools I can do nothing. Soon the pangs of hunger tell me that I am really alive and I have to roam far and wide to pick up a few awful things, or the carcasses of drowned animals if I am lucky. These I must hammer at with stones to get through the skin, and then I swallow some of the pounded raw flesh.

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Imagination can easily complete this picture. It can also paint the frantic efforts of myself and my companions to save whatever there is to save of the science of the Lost World, its arts, its technology. An almost hopeless task—for it will be difficult to rediscover the materials, to reinvent the methods, to make tools anew. How long it will be before our first uncouth stone, bone, and wooden implements will be evolved! As for the getting of metals, I doubt if one generation suffices. And if the first generation, drawing on practical or theoretical knowledge, does not attain the efficient metal tool, the succeeding ones will find it extremely difficult, if not impossible.

But my tales of the Lost World will fascinate the children born into the New tales of vast cities, of houses taller than several hundred of our miserable wattle and mud hovels, of swift locomotion on the earth, and the water, and in the air, of the fast and far transmission of the word, of all the thousand and one wonders of our time. I shall often be regarded as an idle romancer, and after several generations my tale of facts will have become a Myth, a story which the simple believe literally, but the learned deride, just as many of us deride the tales of our remote ancestors, such as the story of Atlantis, which good fortune has handed down to us.

With this chapter we close the first part of this book, the discussion of the cosmic myths which describe the cataclysm of the Tertiary satellite. Of course, we may only have thrown a fantastic light upon fantastic tales, added fiction to fiction. At the same time it may be felt that the deductions are not impossible and the explanations not improbable.

The Capture of the Planet Luna

We must once more describe the capture of our present Moon, in order to connect that event with the mythological reports

In the moonless aeon which followed the breakdown of the Tertiary satellite, the brightest of all planets, Luna, came nearer and nearer. It most probably moved in a very eccentric orbit, more elliptical, perhaps, than that of Mars at present. Luna would therefore come very close to the Earth at certain times and be far removed from it at others. The most favourable conjunctions were those when Luna was at its perihelion and Terra at its aphelion. They were, of course, extremely rare, many ten-thousands of years lying between each, and the different nodal precessions of the two bodies soon separated them once more. But all the time Luna kept coming nearer. Though the approach was imperceptible from conjunction to conjunction, it was very appreciable from one perihelion-aphelion conjunction to another. The distinct disk which Luna began to show in the latter stages of its planetary life grew bigger and bigger, and became more and more brilliant.

There are a few myths referring to unsuccessful attempts at capture. They usually contain the element of a warning given by a supernatural being, and this is often disregarded.

The Pima Indians say. An eagle prophesied on three separate occasions that a great flood would come, but his warnings were not taken seriously. Suddenly a terrible roar

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paralysed men with fear. A green water-mountain rose over the plain. For a very short time it seemed to stand upright like a wall—then it was split by a vivid flash of lightning, and plunged forward like a ravenous beast. Only one man escaped, keeping afloat by clinging to a large lump of rubber or pitch.

A ceremony of the ancient Mexicans seems to refer to the times when the planet Luna periodically came close to the Earth. On the eve of a commemorative festival called the 'Last Night'—perhaps meaning the last *dark* night before the powerful light of the new satellite lit the Earth—priests, princes, and people made a great procession to a neighbouring hill, where certain sacrifices were made. On their return, they declared that now the world would not be destroyed by water for another fifty-two years. This custom, though it became at last a meaningless ceremony, seems to show that the forefathers of the Aztecs certainly had enough astronomical knowledge to foresee that at certain times inundations and other disturbances were to be expected, though probably they had no idea what exactly would eventually happen.

In Greek mythology we read that one of the labours of Hercules was to bring up from the underworld, for a short time, the hell-hound Cerberus, with its terrible face and dragon tail, and with snakes clinging to its body, this seems to point to the passage of Luna outside the Earth and to an unsuccessful attempt at capture.

The Egyptians called the deluges the work of heaven. They regarded them as a sort of disease which attacked the Earth after certain intervals of time. Evidently only minor inundations, due to passages of the planet Luna, can be meant.

Josippon Micha bin-Gorion, in his collection of the Tales of the Jews, gives the following myth. Before the flood, Kenan was king of the world. He caused an inscription

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to be carved on stone tablets, recording that in his time a third of the Earth was inundated, and that in the days of Enos the same had happened. This report again points to the floods caused by close conjunctions of the planet Luna, which were yet not close enough for capture to be effected.

A Maya inscription in Yucatan, deciphered by Ronald Strath, says that the loss of a certain country was caused by a planet brushing close by the Earth.

The Tupi of Brazil say that the Moon periodically falls on the Earth. This must be interpreted as a periodical approach of the planet Luna, which must indeed have given the impression that the little planet was falling down, or falling nearer.

With every conjunction the orbit of Luna was greatly disturbed by the gravitational forces of Terra, its very much more powerful neighbour. At last the smaller planet definitely entered the danger zone. But again and again Luna could dodge the open trap because it lagged behind the Earth. However, after countless unsuccessful attempts—or successful evasions—the critical perihelion-aphelion conjunction occurred.

On this occasion Luna was moving slightly faster than our Earth, partly through being at its perihelion and partly, probably, owing to the pull it had received at the last almost successful conjunction, this pull had deformed the lunar orbit so much that the next meeting not only led to the inevitable capture of the sister planet, but also caused it to shoot so close by the Earth (perhaps as close as 150,000-180,000 miles!) that all beholders must have believed it was falling down. At this terrifying moment it must have appeared very much bigger than its *familiar* size to us, and produced an overwhelming impression. Blind Milton, with his inward eye, saw this event and describes it in the following words (Satan fell like)

The Capture of the Planet Luna

'a planet rushing from aspect malign of fiercest opposition in mid-sky'

The little planet had tried to creep by but it had hardly passed the critical point, the line Sun—Terra—Luna, when the gravitational powers of our planet pulled it back. The parallelogram of the terrestrial gravitational, and the lunar orbital, forces caused a kink in the doomed planet's course. These forces had been jarring against one another at every previous conjunction too, but, because of its dead inertia lag, Luna had always been able to escape with merely a small deformation of its orbit. At the critical conjunction, however, the gravitational pull outweighed the orbital impetus and the neighbour's orbit was so much distorted that it became completely entangled—intertwined, tendril-like—with the Earth's (though, of course, it still retained a semi-independence and remained at all points convex relative to the Sun).

Henceforth the independent planet Luna became the dependent satellite of its captor, Terra.

What an overwhelming and truly grandiose spectacle the capture of Luna must have presented to the beholder! One must picture the brightest of stars, far outshining Venus at its best, drawing nearer and nearer, increasing night after night in brilliance. On the eve of the capture it appeared as a dazzling disk of, say, one-eighth of a degree in diameter. And that disk began to grow and grow before the awestruck spectators it suddenly increased to twice, four times, eight times, sixteen times its size. At its capture Luna must have had, for a short time, an apparent diameter of at least one degree, double the width we know.

But how closely the grand is related to the terrible! The teeming population of the Lost Lands, of whose shining cities all that has remained is a distant gleam in myth and fable, having crowded out of hut and palace and temple to

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witness the heavenly marvel, suddenly felt an icy fear, a nameless terror. The air was full of forebodings. An unknown god had revealed himself before their very eyes in magnificence and splendour. What was his name? What service did he require?

There was hardly time for thought, much less for the utterance of propitiatory praises. The new power enforced its will regardless of anything but cold, cosmic necessity. A sudden shock sent the trembling crowds to their knees, a series of tremors and throes flung them prostrate, grovelling in the dust. And from above, from below, from all round, came a thundering, rumbling, roaring, raging voice, uttering great words in a dark tongue. The houses heard it and crashed, the trees shivered into splinters at its accents, the hills reeled and bowed their heads at its sound, the Earth opened its womb and fire flashed forth. Blinding dust storms swept over the stricken multitudes. But the measure of their affliction was not yet full. Now the end came on: there rushed, from north and south, advancing on a broad front, mountain-high waves, walls of water steeply reared. They swept over the lands, seething, surging, tumbling, tossing, raging, roaring—burying all, proud prince, crafty priest, harmless citizen, in one deep, wet, cold grave.

Few, very few, escaped—a man, perhaps, out of many thousands—‘excellent minions of the Moon’. They lived to tell the myth of Atlantis the Golden, of cities which sank into the sea, and of marvellous islands and continents from which they had come, but which their descendants went out to search for in vain.

They set out in the belief that their forefathers’ reports described things that are. Myths, however, describe things that were—and, with certain differences, things that will be.

The captured Moon was a magnificent trophy, but a dangerous one. Though a dwarf—one-fiftieth of the Earth’s

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size—and feebler still in power—one-eightieth—and though it was hopelessly in the Earth's grasp, its captor was in its clutches, too. A life-and-death struggle ensued. The capture at once caused a terrible succession of cataclysmal changes in the threefold organism of our planet—earth, ocean, and air.

The lithosphere of the Earth writhed in the throes of mighty earthquakes. For their violence we have no means of comparison. Luna wrenched the practically globular geoid out of shape and gave it a new, much more lentoid form, bulging out more at the equator, more flattened at the poles. Mountain-chains were rent. Huge areas were tilted. Old fissures gaped once more. New chasms opened. Water came into contact with fire. A series of super-Krakataonic explosions followed. All volcanoes belched. New flaming mountains jutted their cones into the clouds. Large districts of the Earth were covered by a blazing sea. It was as if Pyriphlegethon, the flaming river of the underworld, had changed its course and welled up into the world of men.

The hydrosphere yielded even more quickly and thoroughly to the lunar pull. The waters left their old beds. Draining off from the poles, they drowned the tropics. How terrible are the waters when unchained! The turbid, turbulent ring-waves surged over whole continents. A new deluge was sweeping over the Earth. The equatorial zone was quickly buried under prodigious water-mountains. It was there, chiefly, that the great struggle of the primeval elements took place.

The waters of the Capture Flood did not stream from north and south straight, but, owing to the rotation of the Earth, in an anti-trade-wind-like way, with a south-east trend in the northern hemisphere and a north-east trend in the southern. A Chinese myth says that the great rivers of China flow in the direction they do, because the goddess

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Niu-Kwa made the waters of the Great Flood stream off towards the south-east. The whole Earth had tilted and sunk into the sea there, we are told.

The atmosphere, too, flowed off from north and south towards the equator. Much of it, probably, then got lost in space. For this reason, and because of the withdrawal, the air-cloak of our Earth became very threadbare in the higher latitudes and the polar districts, and spatial cold soon descended upon them. With the capture of Luna a new Ice Age had started in principle. At the time of the capture cataclysm itself the air had been thick with sulphurous smoke and dense, hot, heavy clouds.

But after weeks of apparent anarchy the warring primeval powers began to arrive at an armistice. The battle died down. Only occasional skirmishes flared up here and there. The water had conquered the fire and calmed the tossing and heaving of the Earth's bosom. The terms of the truce were each to keep what it had been awarded by cosmic law. The waters remained in their new stead in the tropical districts. The Earth's loss of land there was compensated by the acquisition of the districts evacuated by the sea in the north and south. The air never took much active interest in the struggle. Nevertheless it had to bear all the dust of the Earth and the steam of the water, to say nothing of the stench the two combatants made in the course of their fight. It sweetened again as soon as peace was made.

Thus the events of the capture ended. The Earth, *our* Earth, that is to say, the Earth as we know it, had entered upon a new aeon—that of Luna—the Quaternary Period.

Ascertaining the Year of the Capture

It would surely be a most intriguing study to investigate the question in which year—approximately, if the exact date be no more ascertainable—the planet Luna was forced into vassalage. This is not so impossible a task as may be supposed. The capture of a satellite is an event of such magnitude that men would refer to it again and again, and regard it as the beginning of a new æon.

We determine the succession of historical events from the year—fictitious, not actual—of the birth of Christ. This has the disadvantage of needing negative figures for whatever happened before the year One. The other systems, evolved by the Mohammedans, the Jews, the Indians, and others, have never had more than a local or private value. If the year of the capture could be found, a unique way of recording historical dates might be evolved, the only one which would be not arbitrary or artificial, but as natural as the year and the day.

Unfortunately, astronomy can help us very little just now. However, when science has once become more reconciled to the chief points of the Cosmic Ice Theory, a competent person may undertake to calculate possible distances and times.

At present the most significant figures are reached when we compare the Egyptian and Assyrian calendar systems. The two are as different as is possible: the former reckoning in solar cycles, each consisting of 1460 years, the latter calculating by lunar cycles, 22,325 lunations.

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forming one lunar period, equal to 1805 years. As it is a very natural procedure to 'set' a calendar by some momentous cosmic phenomenon, and as the transformation of a planet into a satellite is one of the most overwhelming that may conceivably happen, the determination of the year in which both the Egyptian and the Assyrian cycles coincide must furnish us with a most important indication regarding the capture of our Moon. The Palaco-Assyrians could not possibly have calculated by months at a time when there was no Moon. When the unheard-of thing happened, they must have abandoned whatever system they had in use and taken the convenient Moon as their new measure. On the other hand, the Palaco-Egyptians, there being now two heavenly bodies to calculate time from, must have reconsidered their calendar and started a new era.

We know from history that an Egyptian cycle ended in A D 139. We know also that an Assyrian period ended in 712 B C. On comparing the two we find that

$$\text{A D 139 minus 8 Egyptian cycles of 1460 years each} = \\ 11,542 \text{ B C}$$

$$712 \text{ B C minus 6 Assyrian cycles of 1805 years each} = \\ 11,542 \text{ B C}$$

However else this most remarkable coincidence of figures may be explained, we feel that our assertion, that this is the approximate year of the satellitification of Luna, is not an entirely idle one.

The Egyptian number is assisted by the famous spiral zodiac of Dendera, whose first sign is Leo. (Whether this zodiac is an original sculpture or a late copy we cannot discuss here.) Leo is now the zodiacal sign of August. Supposing that the beginning of the year was reckoned from the vernal equinox, we can calculate that the year started in Leo in about 11,010 B C—a figure that is not so far from the above. It yields not only an interesting parallel

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but also a thoroughly good reason for designing that zodiac

Another pair of extremely interesting numbers is reached when comparing the chronology of the Hindus with that of the Mayas. The initial point of the era Kali-yuga, the present Hindu era, lies in 3102 B C. Their astronomical reckoning itself was based on a lunisolar cycle of 2850 years. The epoch of the mundane era of the Mayas, on the other hand, was established in the year 3373 B C. Their calculation went by heptads of baktuns of 2760 years. If we compare the two systems we find that

$$3102 \text{ B C } \textit{minus} 3 \text{ lunisolar cycles of } 2850 \text{ years each} = \\ 11,652 \text{ B C}$$

$$3373 \text{ B C } \textit{minus} 3 \text{ heptads of baktuns of } 2760 \text{ years each} = \\ 11,653 \text{ B C}$$

This may, of course, be a mere coincidence, as in the above case. The difference of one year is explained by the fact that the two chronological systems do not start on the same day. They exceed the Egyptian-Assyrian result by 110 years, or six Saros periods.

An astronomical calculation of Biblical data by Schiaparelli (of Mars 'canal' fame) is striking. The day on which Jesus was presented in the Temple is February 2nd. On that day also the prophetess Anna was in the sanctuary. In our calendars we find the name of Anna on July 26th. Whatever historical background the Bible story may have, 'Anna' is certainly the feminine form of *annus*, a year. Something, we cannot guess what, may be hidden in the myth. Schiaparelli, on calculating when 'Anna', regarded as a point of the year moving along owing to the precession of the equinoxes, stood at the beginning of February, arrived at the year 11,230 B C.

From the diametrically opposite half of the globe we are supplied with another interesting figure. The great Sun

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Temple of Tiahuanaco in Bolivia not only seems never to have been completed, but also to have been interrupted in its building, as if in consequence of some great catastrophe. If we compare the vernal equinox point of that temple with the present position of the Sun at the beginning of spring, we find that the building must have been begun (and stopped) about 11,600 B C (or 26,000 years, or a multiple of this figure, previously).

An important non-calendaric sidelight on the above figures is yielded by the time calculated to have been necessary to allow the Niagara River to form its gorge by cutting back about 10,000-15,000 years.

The last date we shall give is that of the great and sudden change of climate (the *Klimasturz* of German geologists) which is assigned to the period of about 10,000-12,000 B C. As we have shown, the air-coat of the Earth was then drawn much more towards the equator by the newly captured Moon, which caused the arctic cold to fall suddenly upon districts which had previously enjoyed a rather equable climate.

The question of the day of the capture of Luna is, of course, quite unprofitable. The Hindus call the day at the middle of the sixth lunar (amānta) month Bhādrapada, Kaliyugādi-trayōdasi, the Anniversary of the present or Iron Age Kaliyuga. For theoretical reasons (capture at aphelion-perihelion conjunction) the time of the summer solstice would be most likely. Christmas—which was originally celebrated on January 6th, Epiphany—is another possible point. The name 'Epiphany', the 'star' of the Magi, the 'birth' of Christ, the 'birth' of the 'Aeon' of the Gnostics, and the fact that the Egyptians celebrated a water-festival at that date, rouse some suspicions. Originally the Hindu months were reckoned from full moon to full moon (pūrṇimānta), only later, for astronomical reasons, from new moon to new moon (amānta). The Jews

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and Babylonians celebrated their chief festivals on the Sabbath, at full-moon time. These may be echoes from the earliest times, when the memory of the full-moon capture was still fresh.

We have not been able to answer the question 'When did the planet Luna become the Moon of our Earth?' except in a very general way. But we have surrounded the year of the capture with a ring of figures, allowing us to put that event at about 11,500 B.C., or about 13,500 years ago.

Reports of a Moonless Age and the Capture

Definite reports of a moonless age are very rare. This is not surprising. Only the catastrophic phenomena have left their impression on the human mind, only the working of supernatural—what in German is called *Ueberirdisch*, over-earthly—powers has found a place in man's memory and expression in his myths. And many stories of a moonless age must have died because it was difficult to believe, without a very definite and strong tradition, that the Moon was not always in the heavens.

In Greek literature we find several passages which refer to the moonless age. No less an author than Aristotle tells us, in his *Constitution of Tægea*, that the barbarous Pelasgian aborigines, who inhabited Arcadia before the coming of the Hellenes, quoted, as their chief title to this land, the fact that they were already living in it before there was a Moon in the heavens. Hence the Greeks called them Proselemians. In the works of Apollonius Rhodius we find a reference to the time 'when not all the orbs were yet in the heavens, when there were yet neither Danaï nor Deukalion's race, when only the Arcadians lived of whom it is said that they dwelt on the hills before the Moon appeared, feeding on acorns'.

If the moonless age left hardly any impression on the minds of the forefathers of the present races and tribes, the capture of our present Moon must have been a great

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enough event to be chronicled. Indeed we find a number of capture myths. For instance, the tribes of the Chibchas and the Muyscas, or *Mozcas*, who inhabit the plateau of Bogotá in the eastern cordilleras of Colombia, definitely state that they remember a time before the present Moon became the companion of our Earth, and they tell us how the Moon was created.

'In the earliest times,' the Chibchas say, 'when the Moon was not yet in the heavens, the plateau of Cundinamarca was still surrounded by an unbroken mountain-chain and the gorge of Tequendama was not yet open. The Chibcha and Muysca forefathers were brute savages then, without tribal organization, ignorant even of tilling the ground. But one day Bochica [or Zuhé, or Nemquetheba] appeared, a tall, white-skinned, bearded old man, carrying a golden sceptre in his hand. He taught them how to till the ground, how to make clothes, how to reverence the gods, and how to live in organized communities. His wife was called Chia [or Huythaca, or Yubecaguaya]. She was beautiful of face, but wicked of heart, and tried to undo all her husband's good deeds. Once, taking offence at some insignificant thing, she flew into an insensate rage and caused, by her magic, the Rio Funza [Rio Bogotá] to swell so much that the whole plateau, and presently indeed the whole Earth, were flooded. Only few of the inhabitants were able to reach safe mountain tops. This made Bochica very angry. He banished Chia from the Earth and made her into the Moon. Then he opened the rocky chain to drain the land. The waters then formed the great fall of Tequendama.' Others, however, say that it was the god Chibchacum who caused the flood, but Bochica, appearing in a rainbow, made an end of it.

The Okinagan Indians have the following myth. 'A long time ago, when the Sun [the Moon] was no bigger than an ordinary star, the heroine or semi-goddess Scornalt reigned

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over an island. When her subjects rebelled against her she drove them all to a corner of her island which she broke off and pushed out into the sea. Wind and waves tossed the floating island about till all the refugees except two died. From this couple the Okinagans are descended.'

On urn-pictures of the Peruvians and other American peoples the Moon is frequently found depicted. It is significant that it is always drawn as a tiny disk and never with its much more characteristic sickle forms. It is generally accompanied by the hieroglyph standing for the puma, a personification of evil, an indication that they feared the Moon. These pictures were probably in existence before Luna was captured.

The Peruvians also refer to some change in the course of the heavenly bodies. One of their myths says: 'When the great flood covered the Earth all human beings perished except a shepherd with his family and his flock of llamas. Having observed that the animals anxiously watched a certain group of stars, he became aware of the indications of an imminent destruction of the world through water. Now, without losing time, he scaled, with kith and cattle, the top of the mountain Ancasmarca. His group had scarcely arrived there when the sea began to rise. It rose higher and higher, but the mountain floated on the roaring waves like a ship. This lasted for five days, during which time the Sun was obscured. Then the waters began to subside. Now the shepherd of Ancasmarca left his refuge and descended again to the valley. His children peopled the Earth again.'

According to a Jewish myth, the deluge was caused by the Lord 'exchanging two stars' in a certain constellation.

Various tribes of Central America say in their myths that long ago the heavens approached the Earth, and in one day all was destroyed. According to traditions current in the Antilles, the West Indian Islands are the

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remains of a large continent which was submerged by
the sea

In the Pellew Islands there is a myth of a great flood at the time of full moon (or, rather, at the time when the full moon first appeared in the heavens, at the 'panselenic' capture) It was brought about by Kalits, hero-deities, out of revenge for inhospitality shown to them All people perished except one woman who had been kind to the Kahts They warned her of the imminent catastrophe and she escaped on a raft She became the ancestress of the present aborigines

The Ami, one of the aboriginal tribes inhabiting the eastern coast of Formosa, relate that the four great sea-gods said to those whom they wished to favour 'In five days, when the round Moon appears, the sea will rise with a booming sound Make yourselves ready to escape to a mountain which is near the stars' (very high)

On the island of Raiatea, one of the Society Group, we find a myth which tells us of the time of the capture, without, however, specifically mentioning the new satellite which must have been vividly apparent at that time The sea-god Rua-Haku told a fisherman that he was wroth with mankind and intended to destroy the Earth He advised the man to repair, with his wife and children, to the peak which is now the island of Toamarama They took some tame animals along with them They reached their refuge before the end of the day, and *when the Sun neared the horizon* (that is, when the newly captured full moon began to rise, or, of course, the word 'Sun' may stand for 'Moon') the waters began to rise Now the other inhabitants of the low-lying districts left their houses and fled to the mountains The waters kept rising during the night Next morning only the tops of the highest mountains were still above the surface But even these were submerged, and all who had taken refuge on them

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perished. Afterwards the waters slightly subsided, and the fisherman and his party left their peak and descended to the shore. They became the ancestors of the present inhabitants.

The Babylonians and the Jews assign the beginning of the Great Flood to full-moon day. This is significant—although the Great Flood has been confused with the Capture Flood.

Capture Flood Myths

Capture flood myths are of necessity rather rare

The breakdown of the Tertiary satellite was a matter of several weeks, its powers waned slowly and the girdle-tide, whose eventual end caused the Great Flood, flowed off more or less gradually at first. Thus many people were fully prepared when the final cataclysm came and could escape death. From these survivors a considerable number of deluge myths have come down to us.

Exactly the opposite happened when, after a long asatelic aeon, Luna became the companion of our Earth. The powers of the newly captured Moon asserted themselves suddenly and pulled all the waters they could control into equatorial districts within an extremely short time, not more than a few hours. The teeming lands within the tropical girdle were swept by the waves of this capture tide and buried for ever, the suddenness and magnitude of this catastrophe allowing practically no escape even where preparations had been made. The lack of survivors explains the small number of myths.

Of course, there were warnings. At every conjunction the waters rose more or less considerably, but usually only the coastlands were covered for a short time. They were evacuated for a few days and settled again as soon as the waters had subsided. These periodic and not especially dangerous inundations probably made people feel quite safe. And so, when the great Capture Flood came, most

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people were more or less unprepared, for the measures taken with the lesser floods were useless in face of it

Nevertheless, elaborate preparations must have been made by far-seeing rulers in certain parts of the world. On most of the Pacific Islands, for instance, we find remarkable ancient stone platforms, some of which might be called truncated pyramids, and other buildings, massively built of huge stones neatly joined without mortar. They are situated on islands which are scattered over an area of many million square miles. Evidently they were not built upon the islands in their present 'island' form, but on the mountain peaks of a submerged Pacific Continent, for many of the structures consist of material not found on the present islands. Usually this is taken as evidence that the stone was brought from other islands where it can be found, sometimes many hundreds of miles away. How the transport of some of these megaliths was effected remains obscure. Surely a much simpler explanation is that the material was taken from quarries at the now submerged bases of these mountain islands.

The inhabitants of the Pacific Islands, some of which are still imperfectly known and hardly explored, have no traditions concerning these remarkable prehistoric stone structures. Evidently the builders were not the ancestors of the present inhabitants, but an extinct prelunar race that was wiped out by the capture cataclysm or its consequences. Either the refuge-towers did not serve their purpose, or else the waters did not subside, as they had always done after former conjunctions, and the refugees, their fertile lands gone, were starved out of existence.

There are still echoes of this vast Pacific Continent which was lost when Luna became the companion of our Earth, this Realm of Rapa as we may call it. Easter Island, a lonely, tiny, steep island of forty-five square miles' area, is called Rapa Nui, the 'Great Plain'. It is some 2500 miles

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distant from Rapa Iti, the 'Small Plain', an island of the Tubuai Archipelago. That the two are not only connected in name is proved by the fact that the same prehistoric remains are found on both. Moreover, Rapa Nui is also called 'te-Pito-te-henua', the 'End, or Cape, or Centre, of the Motherland'. It is thus described as the last remnant of the great lost Pacific Continent or archipelago of big islands. What interesting and important work has yet to be done in these islands!

After this little excursion into the prelunar geography of the Pacific we return to the capture flood myths.

While the suddenness of the catastrophe accounts for the small number of reports of the Capture Flood, there can be no doubt that a great number of reports of that event have been mixed with tales of the Great Flood. In a few cases we can recover these.

It seems safe to count as capture myths those which have one or more of the following characteristics: absence of the cataclysmal dragon-fight motif (although a serpent—the newly captured satellite with its ice-dust tail—is, of course, often mentioned), marked absence of the creation element which is usually so prominent in myths of the Great Flood, emphasis on sudden seismic and volcanic phenomena, submergence of rich and highly civilized lands, and insistence on the rapidity and thoroughness of such a catastrophe.

Another peculiar feature seems to be the appearance of a culture hero among lower races, during, or immediately after, the Flood. Such culture heroes are always quite unlike Noah: they are men of amazing knowledge and deep learning, divine beings in the best sense of the word, and they are never crafty shore-robbers or brutalized troglodytes who have escaped alone or with their belongings on a raft or in a dugout. The new satellite, or a personification of it, is sometimes expressly mentioned.

Capture Flood Myths

It need hardly be stressed that most capture flood myths must come from inland and highland dwellers, for men living on the seaboard had very little chance indeed of escaping

In Greek mythology we find several references to floods which gain in meaning if we regard them as capture flood myths. There is, above all, the Ogygian Flood. During the reign of Ogyges, the first king of Boeotia, who is significantly called a son of Poseidon, the waters overwhelmed the land. Similar myths were current in Attica and Phrygia. A flood myth which points to the overflowing of the Black Sea and the rising waters of the Mediterranean is told of Dardanus. Having slain his brother Iasius, he fled from Arcadia, across the sea to Samothrace. When that island was threatened by a flood he crossed over to the Troad, where he eventually became the founder of the royal house of Troy.

The Herero of South-West Africa say that a terrible flood overwhelmed Kaoko, their original home. While most of the Ovaherero were able to escape to the mountains, they lost all their riches, their great herds, with the exception of one bull and one cow. This flood also brought two white men among them. They became the ancestors of the 'coloured' Herero.

The Khoi-Khoi (Namaqua, Hottentots) in the western parts of the Cape Colony say that long ago a 'swimming house' landed on their coast, where Cape Town is now. The Namaqua are descended from the people who left the ship with their cattle and settled there. Their culture hero, Heitsi-Eibib, came from the east.

The flood myths of the Pacific Islands are extremely numerous, but their classification is very difficult. The following myth from the Society Islands seems to point to the Capture Flood. Tangaloa, angry at the disobedience of mankind, plunged the whole land into the sea so that only

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a few mountain tops, the present atchipelago, still showed above the surface. After the waters had subsided a little, a foreigner came in a boat, landed on the island of Eimeo or Moorea, and built an altar there in honour of his god.

Among the North American Indians we find a number of flood myths which evidently refer to the capture. The Navaho Indians of Arizona say that one morning there appeared in the east—and presently also in the south, north, and west—something which looked like a high, steep wall of rock. It was water, however. They fled to the mountains. Another Navaho myth tells how the people were much surprised one day to see all animals running from east to west. On the morning of the fourth day they saw a bright light in the east. Scouts reported that it was a great flood of water coming on. Next morning the flood was quite close, it advanced like a chain of mountains, filling the whole horizon, except in the west. They packed their things and fled for their lives to the mountains. The direction from which the waves are described as coming is significant and correct.

The Choctaws, at present settled in Oklahoma, have the following myth. Of old the Earth was plunged in darkness for a long time. At last medicine-men saw a bright light in the north, the appearance of which caused great joy. But it was mountain-high waves, rapidly coming nearer! All people were drowned, except a few families that had expected this and had built big rafts, on which they escaped.

The Shawnee Indians, settled in Oklahoma, but originally living much farther south, tell of a great flood in which all perished. Only a white man and his family were saved in a big boat, and an old Indian woman.

The Aztec myths are not very helpful to our chapter, but faint echoes are heard in the names of a number of Mexican gods. So Huitzilopochtli, the 'Feathered Serpent',

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the culture hero who brought the Aztecs from the fabled Dawn-Land of Aztlan to Mexico, is described as the 'son' of Coatlicué, the Great Female Serpent, the name of the greatest god of the Toltecs, Quetzalcoatl, means Feathered Serpent, his Maya counterpart Kulkulcan, and Itzamna or Votan of the same pantheon, are also depicted as Feathered Serpents. In this picture we can recognize the tailed aspect of the newly captured Moon. All these gods, moreover, are avowedly of different race from the nations that worshipped them, and they are all culture-bringers, coming from the east. That they are regarded as the inventors or introducers of calendar systems is not surprising. The appearance of the Moon must almost have forced a convenient calendar system upon everybody who could observe and calculate.

Myths of Floating Islands

A very important and peculiar subdivision of the myths describing escape from the waters of the Flood on to mountains is represented by those which emphasize that these mountains, or rather islands, went sailing through the waves like ships. This is not the habit of firm land, however, (unless we think of the sudd, the floating masses of decayed vegetation found on the Upper Nile, or similar drifting islands on the Amazon, or, indeed, of icebergs). It must have been due to an optical illusion, such as we have when we look out of a boat anchored in a river. Unless we take our bearings from the banks, we cannot decide for sure which of the two is moving and which way. It is only by experience that we know that the water of the river must be flowing. On a river without banks, it would be harder to arrive at a decision. And on the wide ocean, whose waters, as we know by experience, move extremely slowly, we should be quite justified in saying that our island had suddenly lost its anchorage and was speeding through the waves, for we could not possibly see that it was the waters to which a great impulse of flowing in the opposite direction had suddenly been given.

With the sudden release of the waters piled up high in the tropical zones, the girdle-tide, the conditions for a strong northward and southward current, with a trade-wind-like trend, were given.

The capture tide of our present Moon must have caused similar phenomena, except that the waters flowed in the

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opposite direction, towards the equator, with a certain anti-trade-wind-like trend

This similarity of phenomena makes it practically impossible to distinguish between mythical reports of the Great Flood, and of the Capture Flood. Of course, with peoples that had experienced both floods, the first tradition will have become merged in the second. Almost all myths of floating mountains or islands, however, seem to come from tropical districts, and as they possess traits which unmistakably point to the capture of our present satellite we may class them with confidence among the capture flood reports.

In Greek mythology we find the story of the creation of the island of Delos. It was fished out from the deep by Poseidon's trident and floated about till Zeus fastened it to the bottom of the sea to serve as a secure birthplace of his children, Apollo and Artemis. The myth of the Symplegades shows distinct traits of the same kind.

The Samoans say that Seve and Pouniu escaped by swimming to an island called Ulusuasi, which ploughed through the waves like a boat. It was from this place that they fished up the Samoan Archipelago with Tangaloa's magic hooks.

The Peruvian myth of a floating mountain called Ancasmarcha has already been given (p. 270). In another Peruvian myth two brothers escaped by taking refuge on a high mountain which floated on the waters.

The Araucanians of Chile tell of a flood which came after a violent earthquake and great volcanic activity. Only few escaped to a high three-peaked mountain whose name was Thegtheg, the Thundering or Flashing One. This mountain floated on the waves.

Compare with these the story of the Okinagans quoted on p. 269.

A myth of the Ojibways, on the other hand, points to the

Myths of Floating Islands

ebbing girdle-tide The manitou Menabozhu blew some grains of sand, which a muskrat had obtained for him by diving down to the submerged Earth, over the ocean. Where they touched the water they grew and developed into small islands which floated about on the waves. Menabozhu jumped upon one of them, steered it like a float, and helped the other islands to grow together into a continent.

The Lapps say that originally the Earth was no more than an island which floated about in the great ocean.

A Jewish myth tells us that before the waters under the heavens were gathered together unto one place the Earth rocked and heaved upon the abyss like a ship upon the sea.

There are many similar allusions and echoes in the Old Testament, as, for instance, in Psalm xlv 2 'Therefore will we not fear, though the Earth be removed, and though the mountains be carried into the midst of the sea.' In Ecclesiasticus xliii 25 we read 'Through his wisdom he calmed the sea and planted isles in it.'

The Myth of Osiris

A Tale of the Capture of Luna

OSIRIS was the offspring of a liaison of the Earth-god Seb with the Night-Sky-goddess Nut, the spouse of the Sun-god Ra. In a terrible rage at his wife's unfaithfulness, Ra swore that she should not be delivered of the child on any of the 360 days of his year. As her time was up, this curse might have caused her considerable difficulties had not Thoth, the god of science and mathematics, another friend of Nut's, succeeded, by a ruse, in procuring for her a spell of time upon which the curse of Ra did not rest. Playing at draughts with the Moon, with time as a stake, he won one seventy-second part of every day, which he made up into five whole days. (In this way the Egyptians accounted for the origin of the five supplementary days which were introduced to establish harmony between solar and lunar time.) Osiris was born, accordingly, on the first of these so-called epagomenal days. At his birth a mighty voice proclaimed that the Lord of All had come into the world. On the second day Nut gave birth to the Elder Horus, on the third to Set, on the fourth to Isis, and on the fifth to Nephthys.

The myth of the birth of Osiris is very complicated, apparently a great number of strands, some of them surely of extreme antiquity, others evidently of late date, have been woven together into a fabric almost impossible to unravel. The most important ideas which we can detach from this myth are that owing to the consequences of an intrigue be-

The Myth of Osiris

tween the Earth and the Night-Sky the calendar system had to be changed, and that it was Thoth, the 'Measurer', a lunar deity, who caused this alteration to be made. The alteration itself amounted to a reconciliation of the artificial year of 360 days (twelve subdivisions of 30 days each) with the solar year of 365 days (neglecting the $5^h 48' 46''$ which make up its real length). But that does not help us at all, neither 360 nor 365 have any relation to lunar time. The original change of the calendar system must have been different. So we are probably nearer the mark if we connect the introduction of a new 'year' with the advent of our Moon. The appearance of this powerful and convenient luminary must have put all time-calculation upon a new footing. The myth tells us that a *fraction* of every day of the 360-day year was *taken away*. This may be the result of direct observation. The capture of Luna may have caused a minute, but nevertheless perceptible, alteration in the day's length. The five new days thus gained were really *taken from* Ra's year and therefore to be deducted from it, leaving 355 days. The lunar year consists of $354\frac{1}{4}$ days. This is approximately as much under 360 as $365\frac{1}{4}$ is over. So the calendar system very probably was originally reconciled with the lunar year. Then, at a later date, when the more scientific solar year of 365 days was introduced instead of the artificial year of 360 days of Ra, the myth will have taken its familiar shape.

Osiris, the fruit of the love of the Earth and the Starry Sky, was born on the first day of a new era which was established by a lunar god. He was not, therefore, originally a solar deity, but a lunar one. Not only his maternal descent and the help of Thoth point to this, but also the report of the Egyptians and Greeks that in early times Osiris had been regarded as a god of the Night Sky. Moreover, if he had been a solar deity from the beginning his 'father' would surely have had solar attributes, Ra,

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however, instinctively recognized that his wife's expected offspring was diametrically opposite to the principle which he himself represented. The 'mighty voice' which proclaimed Osiris Lord of All points to the cataclysmal accompaniments of the capture. As the Egyptians, like many other peoples, regarded the celestial bodies as divinities, the naming of Osiris 'God Number One' also finds an easy and natural explanation. Luna had long been the brightest of planets.

Connected with the birth of Osiris is a circumstance which struck the ancients with wonder, and must have filled Nut herself with surprise: the arrival of four more children, one on each succeeding 'day'. This prolificacy seems nonsensical, and yet it is nothing but an interpretation of observed facts. The atmosphere at the capture period must have been considerably disturbed, so that a continual unhindered observation of the new satellite was not possible. And every glimpse of it on each succeeding clearer night must have shown it in a different aspect. As we know, the glacial crust of the planet Luna was entirely smashed at the capture. The water of its hydrosphere, extremely 'hot' in comparison with absolutely cold space, began to 'boil' vehemently. The lunar globe was densely wrapped in a layer of 'steam', which its feeble gravitational powers could not hold. The pressure of light carried this ice-steam away in a cometlike tail which was given a curved shape by the 'ether-wind' and by the Earth's gravitation. There were four distinct and very striking forms: the full-moon form, with its tail turned away from the Earth, very much foreshortened, but brilliant; the waning form, with its tail in full display, streaming off towards the west; the new-moon form, pale, but distinctly visible, with its foreshortened shining tail hanging towards the Earth; and the crescent form, with its tail fully displayed, turned towards the east. In these four distinct and characteristic

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forms we may find the originals of Osiris, Set, Isis, and Nephthys. Horus does not fit into this tetrad and surely did not originally belong to it, but was added when definite solar attributes began to accumulate round the figure of Osiris. Eventually Osiris 'married' his 'sister' Isis, and Set 'married' Nephthys, or, in other words, the complementary forms were put together.

Our view that Osiris is the newly captured Moon is strengthened by the fact that all the other children of Nut have prominent lunar attributes. Both Isis and Nephthys have horns in their head-gear and a disk, which, though it is described as the symbol of the Sun, may just as well stand for the shield of the full Moon.

Set, however, even shows traces of a much older descent. He is generally regarded as one of the oldest gods of Egypt, as a god, in fact, of the aboriginal tribes before the rise of the Egyptians proper. Set is frequently equated with Apepi, the dragon of darkness that lived in the far west, whence it rushed forth every day with its grisly band of demons. Apepi has been interpreted by most authorities as the evil being that swallows the Sun every evening, but our interpretation is much more feasible: it explains the Qettu or demons as the products of the breakdown of the Tertiary satellite, Apepi, which actually broke forth from the west daily—in its later stages several times a day—swallowing the Sun, and releasing it only after a prolonged struggle. Both Apepi and Set are regarded as lords of evil and darkness. Apepi is called the 'Roarer', and the behaviour of Set is boisterous and violent. Cosmically speaking, the original Set was really the brother of Osiris and preceded him as ruler of the world. Only the theology of a later date put him in his present place.

The story of the children of Seb and Nut has very remarkable parallels in the Norse and the Amerindian mythologies. The Edda tells us of the son of Farbauti (the

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'Dangerously Slaying One', Uranus) and Laufey (Leafy Island, Gaea, the Earth) Loki, and his 'children' Fenris Wolf, Midgarth's Worm, and Hel, which sprang, according to one version, out of his own body, or were born to him by Angrbodha, the Evil Foreboder Fenris Wolf and the Midgarth Serpent are extremely graphic descriptions of the tailed waning and waxing forms of the new satellite, corresponding to Set and Nephthys in the preceding paragraphs (They were also, like Set, and perhaps the other Egyptian deities mentioned with him, forms of the dying Tertiary satellite) Fiery (bright) Loki is a personification of the full Moon, while pale Hel is the new (young) Moon The Wichita Indians of Oklahoma relate that a chieftain's wife got big with child and after a very short time gave birth to four little monsters They were very similar and yet distinctly different in shape A wizard declared that their birth portended terrible calamities The monsters grew bigger and bigger till at last they seemed to fill all the sky Now a voice from heaven told the wizard to build a canoe to escape the terrors which were to come A few days later animals and birds migrated in masses from north to south All people were surprised at this unwonted sight, and at the wizard, who sat in his canoe on dry land But then, suddenly, the waters poured over the land, and every living creature was drowned except the wizard, his wife, and the animals they had taken with them in their canoe When the waters subsided they made themselves a grass hut on the emerging land In the mean time the Tortoise, a water-deity, had caused the four monsters to fall into the flood and be drowned The wizard went hunting every day, and his wife tilled the ground This is how she came by the first corn-ear when she awoke one morning she found that a cornstalk had grown overnight at her side This Isis-feature of the magnificent Wichita report is as unique as it is significant

The Myth of Osiris

OSIRIS is not only the personification of a cosmic phenomenon, he is also a typical capture flood hero. We have already seen that myths of the capture cataclysm often expressly mention the advent of a 'divine' being, a man of different race and superior knowledge. The Osiris myth contains a strong culture-hero element.

Before Osiris came, we are told, the Egyptians were cannibals, had no arts, were ignorant of the high gods and their service, and lived as they pleased, knowing no laws. OSIRIS reclaimed the Egyptians from this savage state. He taught them how to cultivate the ground and winnow grain, the first ear of which was discovered by Isis. He was the first to gather fruits from the trees and to train the vines to poles. He showed his people how to prune them and make them yield richer and better harvests. He taught them how to make grape-wine and how to brew the brown barley beer. The rude Egyptians quickly took to the new diet and became a gentler race. Osiris travelled far and wide in his realm and even beyond (in search of his lost home country?) and gave his people wise laws and told them about the gods and the worship they required. In thus spreading among his people the blessings of civilization he fully earned the title bestowed upon him, Unnefer, the 'Good One', and was placed, after his death, at the head of the great pantheon of gods that he had revealed to his people, as 'God Number One', or God of the Gods.

It seems that Osiris did not come alone, the vessel of his salvation contained, beside Isis, a number of other relatives. It was one of these, his brother Set, who, with a body of conspirators, at last caused his death. The death of Osiris by suffocation in a cunningly wrought chest probably points to a lunar eclipse, the first ever observed.

Osiris married his sister Isis, just as Set married his sister Nephthys. We have already seen that the 'marriage' of gods to their divine sisters may be a symbolic description

The Myth of Osiris

of the merging or fusion of certain complementary 'brother and sister' aspects of some cosmic event. But sister-marriage was of very frequent occurrence, not only in Egypt but elsewhere. Everywhere, however, it was exclusively reserved to the ruler. The reason lies undoubtedly in the endeavour to keep the royal-divine strain pure and uncontaminated by the sluggish blood of terrestrials.

Such, or similar, were the originals of the myth of Osiris. But they were severed by sacerdotalism from their roots, and the notions of a later generation of priests were superimposed on the Osiris matter. The god of the Moon became a god of the Sun, the hero of the Capture Flood became the Lord of the Waters of the Nile, the King of the Earth became the Ruler of the Underworld.

Thus Osiris died a second and even more violent death!

Diluvial and Prelunar Culture

IN the foregoing pages we have repeatedly referred to the high standard of civilization of the diluvians. They built ships to escape from the Great Flood, they dwelt in cities, they reared star-pointing pyramids, they observed the heavens with minute care, and so on. It may be objected that we have deduced this only from those fanciful tales, the myths. But there is other evidence of the achievements of our remote ancestors, and in this chapter we shall consider a small part of it.

We must differentiate between the actual diluvians, the people who lived at the time of the Great Flood, caused by the breakdown of the Tertiary satellite, probably several hundred thousand years ago, and the race that inhabited the Earth when the catastrophic capture of Luna threw man back almost to the beginnings of his technical career.

The diluvians may have had a really high standard, if we consider the time of stress in which they lived and worked. Though we cannot directly prove it, we have no reason to disbelieve that they built mighty arks, though we cannot point to the remains of any artificial hill or tower, we should not regard the myths which speak of them as mere fiction. There is no doubt that a great flood did surge over the whole Earth and that a number of men escaped from it because they had prepared for its coming.

It is much easier to prove that the prelunar inhabitants of the Earth had attained to a high standard of culture.

Diluvial and Prelunar Culture

The capture of Luna took place probably not much more than 13,500 years ago, and certain remains of prelunar culture have survived

These remains are by no means scanty. The Earth is practically full of them, though, of course, the finest examples of art are inevitably lost in the ocean bed.

In all parts of the world megalithic structures are found, many of them of vast size.

The grandiose remains of the Andean culture are well known. At Cuzco there is the famous fortified hill of Sacsahuaman, which is crowded with the ruins of a cyclopean stronghold, certainly of pre-Inca days. Why it should be perched up so high, almost 12,000 feet above sea-level, is not clear, a solution may be found if we regard these remains as dating from the time of the Great Flood, but this idea almost passes comprehension. At Tiahuanaco, near the southern shore of Lake Titicaca, we find stones weighing four hundred tons which were transported to their present site from a quarry seventeen miles away. They were piled into vast edifices, which were, apparently, never completed. How this transport was accomplished, and in rugged and difficult country, too, we have no means to tell. At Ollantaytambo huge blocks of particularly hard and tough stone were fitted so perfectly (without mortar) that even nowadays it is impossible to force a thin knife-blade between them. We do not know what tool was used, but certainly it must have been as fine as the best we are able to produce, with all our metallurgical skill.

The culture which must have been *behind* these remains of culture—that is incalculable.

In all the islands east of Tonga and Samoa we find the remains of megalithic structures. Hewn stones, often weighing many tons, carefully squared and smoothed, are neatly fitted together without the use of mortar. The most striking example is probably offered by the two trilithons

Diluvial and Prelunar Culture

on Tongatabu, one of which is fifteen feet high, and the other thirty feet. No one knows why they were built. A very remarkable fact about some of these stone structures, which we have already noticed, is that they are built of stone not found on those islands at all.

Not only Polynesia, but also Micronesia and Melanesia feature cyclopean remains. On the islands of Ponape and Kusaie, belonging to the Carolines, the ruins of extensive groups of buildings were discovered. They are constructed out of large columnar blocks of basalt on artificially enlarged reefs protected by sea-walls, and are intersected by canals. We also find pyramidal or terraced structures or platforms. The most enigmatic remains on Ponape are the ruins of the dead city of Nan Matal, which cover eleven square miles. On the Marianas the remains are stranger still: we find groups of conical pillars surmounted by hemispherical capitals, always arranged in two parallel rows. They are only up to fifteen feet high, while the capitals are from six to seven feet in diameter. No possible purpose has been attributed to them.

On far-distant Easter Island we find *ahus*, peculiar stone structures of great age, built of large cut stones fitted together without cement. But the most striking remains of a lost culture are the huge *moais*, the uncouth colossal stone heads and rock images, some of which reach a height of 37 feet. There they stand, no one knows why, and stare with sightless eyes over the waters of the endless ocean. There can be no doubt as to their sacral character, their very name, *moai*, being the same as that of the great god Maui of the Pacific Islands. Similar stone figures are found in Hawaii, Tahiti, the Austral Islands (Rapaï), the Marquesas, and on lonely Pitcairn.

The megalithic culture is a world culture and as a world culture it can only be a *colonial* culture.

These paragraphs could easily be enlarged both in detail

Diluvial and Prelunar Culture

and in number One thing in connection with all these extraordinary remains must be noticed many, if not all, of the edifices and images seem to be incomplete, as if some sudden catastrophe had interrupted the work, as if, in fact, the whole generation of builders had been wiped out Unfinished and apparently earthquake-riven stand the megalithic remains of Tiahuanaco, and many of the *moais* lie prostrate, while the red hats of others are still lying, many miles away, in the quarry where they were cut from the living rock

For us the remains are an enigma For the inhabitants of those islands and countries they are the objects of a superstitious awe there is no contact between achievements of this order, and half-naked islanders whose one idea of building is to raise miserable huts of poles and grass

No—the South Sea Islanders are not the degenerate descendants of great races with a high culture Some of them may be, but nothing remains of the days of their greatness save a distant gleam in their old tales, myths, traditions, customs Most of them are only settlers, the descendants of chance survivors of the great cataclysm which changed the face of the Earth some 13,500 years ago, chance survivors, not the pick of their race, who came in proas and dugouts and settled on strange islands which no man had known before

For the islands of the Pacific Ocean are only the peaks of a lost continent The teeming race that inhabited its wide plains and pleasant slopes is lost, as is their land, lost in the waters of the capture tide of our present Moon

Culture Heroes

The cosmic powers exert their influence indiscriminately. The Capture Flood roared over the tropical and subtropical belts and submerged the populous city as well as the lonely hut of the hunter or shepherd, the palace of the noble as well as the hovel of the outcast, and drowned all—except a few upon whom fortune smiled. Among these there may have been men of wisdom and learning.

When the Earth had settled to the new conditions imposed upon it by its new satellite, and groups of survivors began to find their way about the strange part of the Earth where the waves had cast them, one of these princes or priests might join a group. Many myths tell us of such men, the bringers of culture to a people that had lived like the beasts of the fields before their advent.

Most of the culture heroes seem to have come from that greatest of prelunar seats of culture, Atlantis. Small but mighty Atlantis was lost altogether—while the huge blocks of Africa-Europe and America lost only considerable fringes from their coasts. Then, as now, these vast continents were the seats chiefly of very primitive races. That is why a man of even moderate knowledge appearing among them would be regarded with awe and veneration. The difference in race of the culture hero is generally emphasized.

The inhabitants of Bogotá, New Granada, Colombia, say that Bochica (described as an old white man in a blue robe, bearing a golden sceptre) or Nemtereketcha (or

Culture Heroes

Nemquetheba, described as tall and bearded and called the 'divine messenger'), or Zuhé, came long ago from the east to the plateau of Bogotá. With his coming a great flood which then threatened the country subsided. He taught the rude savages to till the soil, to make clothes, to honour the gods, and to rule the land.

This myth is typical of a great number of similar ones. That the Bogotese culture hero was an Atlantean may be inferred from his external appearance, from his having appeared at the time of a great flood, and from the direction of his coming. The different names may possibly mean that there was more than one hero. That the flood was the Capture Flood of Luna is shown by the fact that the waters rose in tropical districts. If the Great Flood had been meant, the myth would have described a great ebb. Besides, as we have seen, the capture or sudden appearance of Luna is expressly mentioned in one of the Colombian myths. Bochica banished from the Earth his evil wife Huythaca, Chia, or Yubecaguaya, who had caused the waters to rise so suddenly that only a few people were able to reach the mountain peaks, and changed her into the Moon.

Votan, the legendary creator of Maya culture, came into the country from the east, bringing with him seven families.

Quetzalcoatl, the culture hero of the Mexicans, landed near Panuko, on the eastern coast of Mexico.

The Loucheux say that at the time of the flood a godlike man came to them from the Moon, whither he returned again after some time.

To turn to the eastern hemisphere, we read in Schliemann's translation of an Egyptian papyrus of the second dynasty, kept in Leningrad: 'About (3350) years ago the ancestors of the Egyptians came to the Nile-land as colonizers, bringing with them the wisdom, the philosophy, and the culture of the ancient state of "Atlantis".' Even if this

Culture Heroes

passage should have been too confidently rendered, there can be no doubt that Egypt saved a great deal of the lost Atlantis culture. Plato, through Solon, derived his knowledge of Atlantis from Egyptian sources.

Greek mythology mentions a great number of culture heroes, Prometheus, Palamedes, Cecrops, and others.

The Peruvians say that their culture was given them by Chon (or Chontusi, or Huiracocha), a red-haired wise man and mighty magician, whose very word levelled the hills and filled the valleys.

The Baal-priest Berossus, drawing on Chaldaean-Babylonian mythology, tells us 'In the first year of the creation [that is, after the great destruction caused by the capture cataclysm], the powerful being Oannes came out of the sea. Though he was of different race [he is described as having a fish-tail, or as being clothed in fish-skin, meaning, perhaps, scale-armour], he spoke in a tongue which they could understand. He taught them, who lived like beasts, how to build towns and temples, how to survey the land, how to grow fruits, and other things. He did not eat of their food, however. After his day's work among them he returned to his palace in the ocean [his ark?]. After him there appeared six other beings who gave great revelations to men.'

An echo of the culture-hero motif seems to be preserved in the Bible in Genesis ii 8-9, where we read 'And the Lord God planted a garden eastward in Eden.' The loss of Eden (at the capture of Luna cf iii 24 'a flaming sword which turned every way') was accompanied by a marked decline in the temperature, the *Klimasturz*, which finds its expression in Genesis iii 7 'They knew that they were naked, and they sewed fig leaves [not to be taken literally: planted vegetable fibres are meant] together, and made themselves aprons' (mats, plaids, blankets). But the culture hero, as a man of higher race, knew how to dress

Culture Heroes

furs, so he made them 'coats of skins, and clothed them' (Genesis III 21, the next verse reports some quarrel between the culture hero and his subjects) As is usual in the Bible, several strands of myths have been woven together

The Mediterranean Basin must have been the seat of a high culture before it was filled up at the time of the capture of Luna As this filling up, both through the straits of Gibraltar and through the Bosphorus and the Dardanelles, was not so very sudden as the submergence of Atlantis or other realms, not only individuals but considerable groups of the inhabitants were able to escape by taking flight to the inner parts of the countries surrounding the new sea Coastal cultures are always higher than inland cultures, so it is not surprising that such groups of survivors were soon regarded as minor deities We do not know the names of the peoples that inhabited the Mediterranean Basin or the shores of the small seas which were to be found there, but Greek mythology tells us of several groups of such 'prehistoric' artificers, some of whom were professedly non-Greek There were, for instance, the Dactyli, who knew the properties of iron and the art of working it by means of fire, the Telchines, who had changed their seat several times because their successive island homes were submerged, and who were workers in brass and iron as well as cultivators of the soil, the Curetes, the inventors of weapons, besides being fosterers of agriculture and regulators of social life, the Cabeiri who were cunning sailors and shipbuilders, and others

The ancient Tibetans assigned Aryan descent to their primitive kings, a statement which we have no reason to doubt In antiquity many kings and higher-caste priests of barbarous peoples abstained from meat diet Evidently they followed a tradition established by their predecessors who had been fruit and vegetable eaters (cf the instance of Oannes quoted above) The rulers of many, especially

Culture Heroes

West African, negro tribes even nowadays are superior in stature and often different in skin colour from their subjects. Such facts point to their being the descendants of a superior ruling caste of other extraction. Many institutions, customs, and ceremonies of negro tribes are remarkably non-negro in character, as, for instance, the remarkable present and past culture of the Yorubas and the Benin tribes.

The culture heroes brought light to a dark world in which (so to speak) the cold glare of Luna had extinguished most of the beacons of human achievement. Some races carried on the torch thus brought to them and found by its light the steps to a new ascent. Others could not ascend. If they did not fall back, they remained on the level to which the original culture-bringer had raised them, and the smouldering remains of his touch throw a grotesque light on the ruins of his work.

Atlantis

There is magic in names

You breathe but the word 'Egypt'—and there rises before you a picture of teeming masses of dark slaves piling pyramids under a sky forever blue. You say 'Rome'—and the ground, you think, trembles under the brazen tread of invincible legions and the air is thick with the blare of martial music. You utter 'Greece'—and the words of the sages' converse are sweet in your mind, and the sound of the artists' chisels rings out in the fine air.

But there is a greater magic in names than that which we have just suggested for these were visions of countries of which we have read much in books, in the history of which we were instructed at school, and to which the luckier ones among us have made pilgrimages. True magic is wrought when a word is pronounced which apparently is not tied to things that are in this world.

And the mightiest among these words of magic is *Atlantis*

When we have pronounced this word, nothing definite is revealed, but it is as if a sudden shaft of sunlight smote through the darkness of the past, allowing us a glimpse of cloud-capped towers, and gorgeous palaces, and solemn temples, and it is as if this vision of a lost culture touched the most hidden part of our soul.

No man living is impervious to the spell of this word, *Atlantis*

Atlantis

THE LOSS OF ATLANTIS

'Far in the Western Seas, beyond the Pillars of Hercules,' the priest of Neith at Sais told Solon, 'there was, nine thousand years ago, an island larger than Asia [Minoi] and Libya [North Africa] together, and from it one could sail on to the farther islands and to the continent which bounded that ocean. This island was called Atlantis, and its powerful kings ruled over many other islands and parts of the continent. In Libya their power reached to the frontier of Egypt, in Europe as far as Tyrrhenia. But their endeavours to extend their empire over Egypt and Greece miscarried, chiefly because of the heroism of the Athenians. Just at this time tremendous earthquakes and inundations set in, and in the course of one dire day and one terrible night the island of Atlantis sank for ever into the waves.'

Such is, in few words, the story which Plato gives us in his *Timaeus*¹—probably the greatest wonder-tale of the world. Its authenticity was doubted from the beginning. On the other hand there were many who felt it to be based on events which were, though surprising, not impossible. Many fearless navigators searched the wastes of the Atlantic for the 'nameless city in the distant sea, white as the changing walls of faery'. Distant visions lured them farther and farther, in the glory of the sunset, high and distinct, but for ever unattainable, rose the embattled walls of Antilia, the Isle of the Seven Cities, the spicy hills of the Islands of the Blest, Avilion the Fair, Brendan's Isle, the Promised Land of the Saints.

How delightful are the maps and charts of the fourteenth, fifteenth, and sixteenth centuries! The existence of a large continent beyond the western sea had been proved beyond doubt, but while bounded by these lands of fact

¹ His *Critias* contains chiefly broad elaborations.

Atlantis

the expanse of the wide ocean is strewn with the lands of fable And their names are music Atanagio, Bellicosa, Brazil, Frislanda, Isla dos Sete Cidades, Jezirat al Tennyn, Mayda, Pia, Royllo, Satanaxoi, Sariat, Sirtinke, Tanmar, Ynysvitrin Even the careful Arabian geographers did not hesitate to place them on their maps in mid ocean Their existence was so firmly believed in, that famous mariners aimed for them in their voyages of discovery, in the case of St Brendan's Isle until the eighteenth century With the making of modern sea charts, however, the elusive lands of abundance and perpetual summer fled farther and farther west The belief in them was at last relegated from the bridge to the fore-castle There it lingered—till it went overboard to make room for better yarns

So the search for the Earthly Paradise ended Any further search was declared futile Meropis, the realm of the daughter of Atlas, was nothing but a fable, Atlantis was a utopian myth, a tendentious tale devised by Plato to illustrate some pet political ideas of his, the galaxy of happy isles had only been conjured up by mirage and auto-suggestion Triumphantly the captain of the charting-ship wrote in his logbook, 'There is no Atlantis,' and the captain of the cable steamer wrote the same

But the former had cruised, perhaps, hardly two miles from the ruined halls of the royal castle of Atlantis, and the latter may have laid a cable across the very market-places of the Seven Cities

It would be very strange if there were only one report of the destruction of Atlantis, and it would cast a very unfavourable light upon the veracity of Plato The vast island must have been densely populated, and out of its teeming millions quite an appreciable number must have survived the catastrophe Besides, Atlantis was a colonial empire, and many of her sons must have been absent on

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military, diplomatic, or trading expeditions, or on voyages of discovery, practically all over the world. As only the equatorial, tropical, and subtropical zones suffered from the Capture Flood, those who stayed to the north of a certain parallel of latitude saw, to their astonishment and terror, that the sea suddenly began to go back leaving their argosies hopelessly aground and their harbours high and dry, far inland. Those who were absent on inland expeditions easily escaped the seismic and volcanic consequences of the capture, terrible though they were—unless, of course, they happened to be in such dangerous regions as that which was filled by the Mediterranean. There they shared the fate of their brothers at home, as Plato specifically mentions in another passage of his tale.

It was these soldiers, sailors, merchants, and governors who, rallying after the great catastrophe, tried to get into communication with their mother country, from which no news had reached them for some time. And it was these navigators who searched the face of the Atlantic again and again for Atlantis and the other islands, and so transmitted the lore of the vanished lands to later ages. But, when generation after generation was unsuccessful in the search, the castles under the sea were thought to be castles in the air. And so one of the greatest romances of mankind ended—or began.

Plato's tale of the sudden submergence of a great realm is not the only one that has been preserved. We find a most striking parallel in that very peculiar book, the Revelation of John. This has already been treated in full detail in an earlier chapter and we need only recapitulate here.

The seventeenth and eighteenth chapters of that document offer many difficulties if their descriptions are taken as referring to the same cataclysm as the previous and succeeding portions of the book. They gain in meaning if considered separately, for, while the Apocalypse proper

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describes the breakdown of the Tertiary satellite, these passages refer to the capture of Luna

'I saw another angel come down from heaven, having great power, and the Earth was lightened with his glory' (Revelation xviii 1) This 'mighty angel took up a stone like a great millstone, and cast it into the sea, saying, Thus with violence shall that great city Babylon be thrown down, and shall be found no more at all' (xviii 21) 'Alas, alas that mighty city, for in one hour is thy judgment come' (xviii 10)

The 'city' in the above passage is called 'Babylon', which was not its real name. It is, rather, a general expression for any great power against which the Jewish authors of that time felt a spite. Many details, of course, might refer to the historical Babylon, the power, the splendour, the overbearing demeanour, the corruption (or, rather, the over-refined culture, if seen with other than Jewish eyes). The *apocalyptic* Babylon must have been the great emporium of a seafaring nation of astounding wealth, situated in a key-position on the shore of a suitable sea, a 'medi-terranean' sea in the most literal sense of the word—and not three hundred miles from a shallow gulf. We can only suppose that the Babylon of Revelation—though certainly a 'Gate of the God', *Bāb-ilu*—was another city situated elsewhere.

The Babylon of Revelation xvii and xviii stands for Atlantis.

This conjecture tallies with the descriptions given of it 'the great whore that sitteth upon many waters' (xvii 1), whose 'merchants were the great men of the Earth' (xviii 23), whose vassals the kings of the Earth have become (xvii 2, 18, xviii 3), that 'lived deliciously' (xviii 7), and through whose abundance of choice merchandise the trade of the world prospered (xviii 3), which are remarkably similar to those given by Plato. Moreover, the sudden destruction of the apocalyptic Babylon is most significant.

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Wherever a town is 'doomed' its fall is gradual, one 'third' after another is destroyed. In these two chapters, on the contrary, the annihilation is as complete as it is sudden. The insistence on this is marked according to Revelation xviii 8, her 'plagues' came in one day—a striking parallel to Plato's tale—while verses 10, 17, 19 stress the suddenness of the cataclysm by limiting it even to one hour. The great Babylon, Mother of Cities, sank into the sea amid seismic (it was 'thrown down with violence', xviii 21) and volcanic phenomena (it was 'utterly burned with fire', xviii 8, 9, 18) just as in Plato's *Critias*. The description of the sudden submergence is magnificent: the waters rose as if a bulky object like a great millstone had been plunged into them. This millstone, a big, circular white stone, and the bright angel who threw it down are a unique feature. In this image we have a very graphic, very picturesque, description of the full-moon mode of the capture of Luna.

That the capture is really meant is confirmed by the 'beast', mentioned in connection with Babylon, that 'was [the dead Tertiary satellite, called, besides dragon and serpent, *thêron*, beast], and is not [moonless age], and [Luna] shall ascend out of the bottomless pit' (xvii 8) where it had been chained for 'a "thousand" years' (xx 2, state after the breakdown) to be 'loosed a little season' at the end of this age (xx 3, the capture cataclysm).

In many Biblical passages the end of Atlantis is referred to, so in Jeremiah li and l 'Babylon that dwelleth upon many waters, abundant in treasures shall become heaps, a dwellingplace for dragons. Babylon is suddenly fallen and destroyed. And they shall not take of thee a stone for a corner, nor a stone for foundations.' Apparently the custom was to take along sacred keystones when founding a new colony, while destroyed cities were used as quarries from which building material was extracted. 'The

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sea is come up upon Babylon she is covered with the multitude of the waves thereof At the noise of the taking of Babylon the Earth is moved, and the cry is heard among the nations' (seismic phenomena)

The repeated dangerous conjunctions of the planet Luna are referred to as follows before the final destruction 'a rumour shall both come one year, and after that in another year shall come a rumour [reports of repeated inundations of coast districts], and violence in the land, ruler against ruler [struggling for safer areas] Though Babylon should mount up to heaven [settle in the highlands or build artificial hills of refuge] shall spoilers come from the north [Capture Flood] The voice of them that flee and escape out of the land of Babylon' is heard everywhere.

Jeremiah drew from sources which are now lost, and he 'wrote in a book'—also lost—all that is 'written against Babylon'

Plato's *Timaeus* and *Critias* and Revelation (besides the other shorter Biblical references) are not the only reports of the end of Atlantis and her immediate island dependencies Another report, as striking as it is important, comes from the western hemisphere It has come to us in the famous Codex Troano, a Mayan pictographic manuscript, whose rebuses have been interpreted as follows

'In the sixth year of Kan, in the month of Sak, on the eleventh of Muluk, earthquakes began, of a violence not hitherto experienced They continued, without interruption, till the thirteenth of Chuen The island of Mu, the land of the mud-mountains, met its end through them Twice it was lifted out of the sea and then suddenly, overnight, it was gone The continent rose up and fell several times, like a bubble ready to burst At last the surface of the Earth gave way Ten realms were rent asunder, torn into fragments, blown up into the air Then they sank into

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the depths of the sea, and with them perished their whole population. These things happened 8060 years before the writing of this manuscript.'

In this report we again find the catastrophe described as being due to earthquakes culminating in the submergence of the country in question. The super-Krakatoanic explosion which shattered the continent mentioned in the Troano manuscript, and which was due to sea-water coming into contact with the glowing magma of the Earth through the earthquake-split crust, thoroughly fits into the picture. The Troano story is also important because of the date it gives—8060 years before the writing of the codex. Unfortunately we can make nothing of it, for we do not know when this codex was written. The manuscript, which has been saved from the unhallowed hands of the Inquisitors, is only a copy of a lost original—and a corrupt one, apparently.

We have already noticed the Maya inscription in Yucatan which says that the loss of a certain country was caused by a planet brushing close by the Earth.

The Theosophists, we should not omit to mention, say that the island of 'Poseidonis', the last remnant of the giant island or continent of Atlantis, was swallowed up by the sea in the year 9564 B.C. Whatever we may think of their ways of arriving at their revelations, we cannot help recognizing a certain element of originality in them. The name of Poseidonis would seem to be an echo of Plato's tale. There the gods divided all the Earth into lots. The island of Atlantis fell to the share of Poseidon.

In the Atlantis group we must also reckon the mythic Isles of the Hesperides and the Island of Erythraea, the scenes of two of Hercules' labours. They are not actually reported as having been submerged, but must have disappeared in some way or other, for lost they are. They were situated in the far west, beyond the Pillars of

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Hercules, which, indeed, had been set up in commemoration of his exploits in Erytheia. The high state of horticulture and cattle-breeding respectively in those islands directly points to Atlantis. The dragon Ladon, that watches the golden apples, and King Geryon (the Howler, or Roarer, represented as a terrible winged monster capable of assuming three different forms), the owner of the red beeves, are, most probably, echoes of the breakdown of the Tertiary satellite, which 'lived' in, and came forth from, the west, and which became mixed with the Atlantis stories.

We find what is possibly a reference to some Hesperidean country in the Bible, Numbers xiii. The spies sent out by Moses into the country of 'Canaan'—which shows several definite Atlantis traits—returned with, among other things, a cluster of 'grapes' so heavy that two men had to carry it between them on a staff. Such grapes do not exist, but if, instead, we say that they carried a bunch of bananas—a fruit for which there was no word in Hebrew—the story becomes quite credible. The mythical Canaan, then, was not identical with the country the Jews conquered and settled under Joshua. The banana, one of the oldest cultivated plants, would naturally point to Atlantis. As long as we cannot prove Jewish missions to the far west, however, we must accept the view that the author of Numbers xiii drew upon the reports of some other people, possibly the primitive Phoenicians, and used them for the adornment of the annals of his own nation.

Further references to Atlantis are to be found in the works of the Greek Neoplatonist philosopher Proclus, he mentions islands in the outer sea (Atlantic Ocean) whose inhabitants had a tradition that for long ages their islands and others had been under the rule of an immense island, or island continent.

The Roman writer Claudius Aelianus in his *Varia Historia*, a collection of rare and curious lore, tells us that the

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Greek historian Theopompus of Chios mentions a talk between Midas, king of Phrygia, and Silenus, in which the latter speaks of the existence of a great continent in the outer sea. Its inhabitants, the Meropes, were the builders of large cities.

Writing of the Gauls, Timagenes of Alexandria, a lesser Roman historian, says that they had traditions that their country was originally inhabited by three quite different races—the aborigines (possibly Mongoloid), the emigrants from a distant island called Atlantis, and the (Aryan) Gauls.

Diodorus Siculus tells us that the Phoenicians in their voyages came to a big island beyond the Pillars of Hercules which was full of choice things of every kind.

In addition to these reports of islands which belonged to the mid-Atlantic group, reports have come down to us of many islands which were closer to the continent of Europe. The classical example is probably that of the loss of the flourishing state of *Lyonnesse*, off the Cornish coast, whose sudden disappearance beneath the sea is described at large in the *Chronicles of Florence of Worcester*. Tales of cities which suddenly sank beneath the waves are numerous in all parts of the world. The harbour cities of the prelunar age—*Is*, *Vineta*—must have suffered most, for the coasts from a certain parallel of latitude down must have become submerged. As these harbour cities were again and again searched for after the capture cataclysm had subsided, definite myths as to their loss could be formed, some of which have come down to us.

The loss of the land of *Lyonnesse* seems to have a parallel in the loss of the great Island of *Scanzia*, the original home of the Goths. This island lay in the far west of the great sea, where, among others, the island of *Thule* was also situated. For reasons which *Jordanes* does not mention in his history of the Gothic nation, they left *Scanzia* in three ships under the leadership of King *Berig*. It must have

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been a question of life or death, for they broke forth like a swarm of wild bees. This mythical island is also mentioned by William of Malmesbury, in his *Gesta Regum Anglorum*, where he tells of Scaef, the mysterious babe, who was washed ashore there quite alone in an oarless boat, his head resting on a sheaf of corn, all his treasure. When he grew up he became the ruler of the sea-roving Angles in Slesvig. Many Anglo-Saxon kings boasted of their descent from him. Other obscure traditions of the Saxons, the Suevians, and the Franks also seem to point to some fatherland beyond the sea.

'I shall bring up the deep unto thee, and great waters shall cover thee,' says Ezekiel in one of his Atlantics ('Ty-rus') passages (chapter xxvi), 'though thou be sought for, yet shalt thou never be found again.' But we have proved the masters of this prophecy. Atlantis has been found! So far, of course, only our mind's eye has seen it, but the fact that there was land in the mid Atlantic is firmly established. A cable ship, when dredging for a damaged cable, fetched up a piece of vitreous lava, such as could never have been formed by a submarine flow. It must have come into existence at the time when Atlantis perished. This is a pointer for further search in the same direction. Systematic dredging in certain areas of the Telegraph Plateau, which would have to be carefully determined with the electrical sounding apparatus, is needed. In the event of even the smallest find, divers would have to go down, in some specially constructed diving-sphere, to investigate. It is time to search for Atlantis!

Prelunar Geography and Lunar Changes

We shall now consider how our Earth looked some 14,000 years ago, and what changes were wrought when the Age of Luna set in

The End of the Mongolian Sea

When our present Moon was captured, the waters were quickly drawn into the equatorial and tropical districts. The result was a sudden flood which buried whole continents, and changed the outline of those which remained. The lithosphere of the Earth was wrenched out of shape—less suddenly, but with equally disastrous results. For weeks and months, for years even, incessant earthquakes shook and tore the Earth's broad breast and changed its face. Mountains were reared up into rugged heights, valleys were cleft, the whole lithosphere was split into slabs. Then volcanic activity on a gigantic scale began. The orographic system of the continents suffered profound changes. Rivers were diverted, ancient lakes disappeared, and new ones were formed, inland seas came to an end.

All the marvellous waterfalls of our world are given a very recent date. We may safely attribute the same age to each of them and connect their coming into existence with the capture of Luna. The Niagara Falls are a typical example of a 'young' waterfall, and so are the Victoria Falls.

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The formation of the latter, and probably other changes wrought in the Zambezi system, are largely responsible for the presence of the Kalahari Desert. We shall follow up these questions in more detail on a later page.

The greatest of all continental catastrophes was the sudden draining of the Mongolian Sea.

This gigantic inland sea, a landlocked ocean almost, of greater area probably than the Mediterranean and certainly of much greater volume, once filled most of that remarkable, vast depression in the interior of the Mongolian Plateau. Where now the sand-waves of Han-hai, the Dry Sea, the marvellously plastic Chinese name of the Desert of Gobi or Shamo, slowly wander, there rolled once the wide waters of this Mediatic Sea. The richly sculptured coast of this huge expanse of water was the home of a teeming population of many nations, that lived in abundance in an almost subtropical paradise enjoying an equable climate. There lay one of the 'Cradles of Mankind'.

At the advent of our present Moon this paradise was lost.

The capture deformations laid a broad breach in the western dam of this Mediatic Sea, the Khaptagai Mountains, situated between the Tian Shan and the Altai systems. Then its waves surged out in a mighty flood between the Dzungarian Alatau and the Jair and Barluk (Orkochuk) Ranges. A bankless river of unimaginable dimensions, soon thirty miles and more broad at its 'source', 4000 feet and more deep, rushed down into the western lowlands with terrific speed. If we connect the lakes of Turkestan—Telli-nor, Ebi-nor, Ala-kul, Sasyk-kul—with Lake Balkhash, we have traced the 'channel' of this deluge-river very fairly. In the Balkhash region the waters of the Asiatic deluge expanded into the dimensions of a sea, which reached from the northern ranges

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of the Celestial Mountains into Siberia. Then the way to the west was found and this Sea of Turkestan drained down into the Aralo-Caspian depression. Over the Famine Steppe the waters reached the Aral Basin. The southern spurs of the Ural Mountains and the northern chains of the Iranian system narrowed the vast sheet of water and caused it to flow west with a greater volume and vehemence. The Caspian depression was now filled up, with the Ust-Urt Plateau as an island, probably. Then the waters found their way farther west through the Manych Depression down into the lower Don valley, the Sea of Azov, and the Black Sea. Again the waters were dammed up, till the Bosphorus-Marmora-Dardanelles gate was forced and the Mediterranean valley was filled.

The Mediterranean was not in existence at that time. In its place there were a number of small seas or huge lakes, probably three. The easternmost was the Levantine Sea, into which, above all, the River Nile drained. The central basin was filled with the Ionian Sea into which the 'Adriatic River' flowed. The Balearic Sea was the farthest west and was chiefly fed by the Rhône.

When the Mongolian waters found their way beyond the Bosphorus they swept down into the Aegean valleys and submerged all the land, except the mountain tops. Thus the 'Archipelago' (the broad-cast islands of the Aegean, the 'Kingdom in the Sea', as its literal translation is) was formed as the Levantine Sea filled up. Then the waters flowed over into the Ionian Sea and rose considerably, hindered from a farther westward spread by the Sicily-Malta-Tunis-Tripoli bar, in addition the valley of the Adriatic swallowed up a considerable volume of water. The ancient and high civilizations which fringed the Levantine-Ionian basins then met their doom. Only a small percentage of the inhabitants of those regions survived. At last the waters forced their way over into the Balearic

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Basin and finally out into the Atlantic Henceforth Europe and Africa were sundered

In geological works we often find two contradictory statements in one place we read that the Mediterranean is all that remains of a great ocean which, at an earlier geological period, encircled more than half the globe, at a time when the Atlantic Ocean was not yet formed, in another place, we are told that the Mediterranean must be regarded as a very young sea because of the remarkable seismic and volcanic activity which we find in its basin

Nevertheless the two statements are quite correct—though only if viewed in the light of the Cosmic Ice Theory The globe-encircling 'Thethys Sea', whose presence we can deduce from the records of the rocks, was the post-stationary girdle-tide of the Tertiary satellite whose northern fringe lay just about in the same latitude The Mediterranean of our times, however, belongs to the age of the capture of Luna It was formed at the same time as the Atlantic Ocean—in the form that is familiar to us, at least At that time must also have occurred the formation of the Persian Gulf, the Red Sea, the Caribbean Sea, etc

When the waters of the Indian Ocean filled up the valley of the Persian Gulf, they surged up many hundred miles farther north than they reach now, owing to the great gravitational tide caused by the closely approaching new satellite and the inertia of the waters This was the deluge that overwhelmed the settlement whose traces were recently discovered below the lowest strata of the City of Ur This Capture Flood should not be confused with the Great Flood of which the Babylonian reports tell, and which some geologists think was caused by seismic disturbances in the Persian Gulf

The basin of the present Mediterranean must have been densely populated by a number of highly developed

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nations After the loss of their country those who escaped settled round the shores of the new sea That is why the Mediterranean fringe-cultures seem to be so rootless, and not founded upon primitive bases Egyptians, Cretans, Phoenicians, Etruscans, and so on, appear to us more like colonists, than indigenous races And probably they were only the surviving colonists of the lost colonies of a lost empire

At least two great areas were submerged Aegea in the east and Tyrrhenia in the west We can infer the existence of land masses where the Aegean and Tyrrhenian Seas now roll, from the fact that they are the two great centres of volcanic and seismic activity in the Mediterranean While the old sea-bottom of the Levantine, Ionian, and Balearic Seas remained undisturbed, the weight of the water caused the newly submerged lands of Aegea and Tyrrhenia to subside or break in, and volcanic vents and seismic centres were formed Nor is this young volcanic activity the only evidence of the existence of lost land there At the southern end of the Apennines, for instance, we find boulders of granite and schist many hundreds of miles from the nearest crystalline formations They are of considerable size and mostly still angular, so that they cannot have reached their present positions on the land-way We can only account for their presence by concluding that even in comparatively recent times a large land mass consisting of ancient rocks occupied the space now covered by the southern part of the Tyrrhenian Sea The blocks were flung to their present resting-places by the raging waters of the young Mediterranean

In the foregoing paragraphs we have stressed the opinion that the Mediterranean was formed by the waters of the Mongolian Sea Very probably, however, the suddenly rising waters of the newly formed Atlantic Ocean also surged in through the Straits of Gibraltar In the

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northern hemisphere the ancient beaches approach the present strand lines just about in the latitude of Gibraltar. The earth-girdle of that latitude therefore remained stationary when the lunar gravitational powers caused the equator to bulge out and the poles to sink in. It had to sustain the pull on one side and the push on the other, however. This strain broke the rocky chain which joined Europe to Africa (the rock of Gibraltar indeed looks as if it had quite recently been wrenched off from the opposite side) and the swollen waters of the Atlantic poured in. They surged east (Tyrrhenia), south-east (Tunisian-Algerian shats, and great areas of North Africa, forming what we may call the Sahara Sea), and north-east (Rhône valley). Ascending the Rhône valley, they may have penetrated into the Mainz Basin, or, skirting the north flank of the Alps, they may have fallen into the Danube valley and descended into the Vienna Basin. The waters of the Mongolian Sea also penetrated up the Danube valley and filled the Hungarian plains, and then, apart from covering great tracts of Russia, moved round the Carpathians and swept far to the north-west. The Sarmatian deposits tell us of this age and give us some idea of the extent of this enormous, but only temporarily existing, sea. In the Vienna Basin the Mongolian waters of the east met the Atlantic waters of the west.

Such, or similar, must have been the cataclysm of the Mediæsiatic Sea. At their greatest extent the waters must have formed a more or less uninterrupted ocean which encircled the Earth from Morocco to Mongolia, a length of almost 120 degrees, with a breadth of about 20 degrees of latitude (30° - 50° N). This state was, of course, if it ever existed, only of short duration, for the waters ebbed off, surged over the continents, and found their level at last, forming a string of huge seas, the largest of which is the Mediterranean with the Black Sea.

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The different climatic conditions caused by the breakdown of the Mediatic Sea fundamentally altered the face of a huge area of the Earth. When rain and snow falls became scarcer and scarcer in this area, after the emptying of the greater part of this wide evaporation basin, the glaciers of the mountain chains which surrounded it began to shrink. The diminished water masses sent down by them did not suffice to maintain even those small sheets of water which still filled the lowest depressions of the ancient sea-bottom. At last, probably, many of the rivers never reached them. So they wasted away into saline swamps and salt deserts. A great desiccation began, at first gradually, and then with increasing rapidity. It has left us *Han-hai*, the Sea of Sand.

We can imagine the amazement of the peoples clustered on the fringes of the Mediatic as they watched their Sea go back from their harbours and shores. Slowly they followed it, and generation after generation found life harder. They left their cities, sank into primitive ways, and began to roam the vastnesses of Central Asia. A great centrifugal emigration began, but most of the hordes moved west, the direction in which the waters had gone. The desiccation, advancing more and more rapidly, drove wave after wave of fugitives out of the old sea-bed in which, at last, the sands ruled supreme. The cradle of untold nations had sent forth its last child.

That there was a Mongolian Sea has been proved beyond doubt. Its sudden and catastrophic end cannot be denied. The pouring out of its waters towards the west is amply supported by the geological features of those regions. Turkestan, the western boundary of the Mediatic, has an immense seismic activity, a sign of recent great disturbances there. Fossils and living creatures show the connection of the Black Sea with the Caspian and the

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Sea of Aral and the lakes farther east in a quite unmistakable and irrefutable way

The Sahara Sea

Even to this day we find distinct traces of a southern extension of the Mediterranean, the Sahara Sea alluded to in the preceding chapter

In Tunisia a line of salt-lakes, or rather salt-marshes (shats), leads into the interior from the Gulf of Gabès (Syrtis Minor) Shat el Jerid, Shat Garsa, and Shat Melrîr, the last mentioned already on Algerian territory But for the rising ground near the coast, these sunken areas lying a few feet below the level of the Mediterranean would still be shallow bights

The Tunisian shat region and the Tripolitan chain of low-lying oases have the distinct appearance of being silted-up marine inlets or branches of the Mediterranean The fossil shells in the northern reaches of the Sahara and the Libyan Desert belong to the Mediterranean fauna This, too, shows the one-time connection, and more clearly than anything else

Algeria, too, abounds in extensive salt-lakes and marshes, though they are situated a few hundred feet above sea-level, on the 'Plateau of the Shat' The most important of these are, from east to west, Shat el Hodna, Shat el Shergui, and Shat el Gharbi They are the remnants of a vast sheet of water which covered the greater part of the wide valley between the Little and the Great Atlas How the water got there remains to be decided, whether from the east, mainly along the line of the Tunisian Shats Biskra, or along the line Tunis Timgad, or from the north, through the deep-cut, canyon-like ravines and valleys of the Wadis, as, for instance, Wadi Sheliff These ravines are so well washed out that this latter suspi-

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cion seems to be well founded. However, they may have been outlets of the 'Saharan' branch of the proto-Mediterranean rather than inlets. Then again, the Wadi canyons may date from the time of the girdle-tide.

In Tripoli the Mediterranean reached from 80 to 100 miles farther south, as far as the steep scarp of the Sahara Plateau. Between the gently rising coast and the rocky foot of the Great Desert there lies a shallow sunken area running from the Gulf of Sidra (Syrtis Major) over Aujila-Siwa to the Natron Lakes and Birket al Qarun (what remains of the Lake of Moeris) in the Fayum. The Oasis Siwa is about 100 feet below sea-level, and the depression descends to about 150 feet below sea-level towards the east. The seven Natron Lakes are a remnant of the branch of the Sea which once filled this depression. In fact, saline accretions are found throughout these districts.

The three most remarkable projects ever put before the world with regard to the Mediterranean were the 'Flooding of the Sahara', the 'Flooding of the Libyan Desert', and the 'Draining of the Mediterranean'. These, together with the partly realized reclamation of the land which sank into the Zuyder Zee, represent the highest ambitions of man in his struggle against the cosmic powers—trying to turn the wheel of time back, in the case of the Zuyder Zee to the twelfth century, in the case of the Saharan and Libyan projects beyond the ken of history, to about 5000-10,000 B.C., and in the case of the closing of the Straits of Gibraltar to the time when Luna was captured, about 13,500 years ago.

Between the years 1870-1880 the scheme of the French colonel François Roudaire was strenuously advocated. The idea was to dig a canal through the low sandy bank which separates the sunken area of the Tunisian shats from the Gulf of Gabès and to create an inland sea of an area of about 3500 square miles and an average depth of

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about 78 feet. Though this Tunisian 'sea' would only be of the size of Lake Onega or Titicaca or about twelve times the size of Lake Geneva, the plan was magnificently boosted as the 'Flooding of the Sahara'. With Roudaire's death in 1885 interest in the project quickly waned. Today it is regarded as one of the curious ideas of French colonial enterprise in its heyday.

The project of the German Sahara explorer Friedrich Gerhard Rohlfs, which was worked out at about the same time, was to connect the depression east and west of Oasis Siwa with the Mediterranean (Gulf of Sidra, Syrtis Major) by means of a canal, thus creating an inland sea or marine gulf and converting the Barca Plateau into a peninsula. This 'Sea of Tripoli' would have exceeded (probably in area and certainly in depth) the 'Sea of Tunisia'. However, the 'Flooding of the Libyan Desert' shared the fate of the 'Flooding of the Sahara'.

It is as well that neither of these projects was realized, because they would have created powerful interests which would have backed the other interests (political, shipping, and so on) in opposing the last and most gigantic project, that of making the Mediterranean a landlocked sea by closing the Straits of Gibraltar. This plan is by no means as fantastic as it sounds. The cool calculation of the modern engineer shows that it is possible. Although the costs involved would be enormous, the construction of the artificial isthmus would repay itself almost at once and yield fabulous profits for centuries to come. The expenditure of the Mediterranean by evaporation greatly exceeds its income from the rivers which flow into it. Therefore a strong current enters at the Straits of Gibraltar, the salinity of the Mediterranean exceeds that of the Atlantic Ocean, and its level is from 15 to 24 inches lower than that of the Atlantic. If now the 8 to 13 miles of the Straits, which are only about 200 fathoms deep, were blocked, the level of the

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Mediterranean would sink appreciably and the land area would steadily increase. If the waters were lowered by 200 to 250 fathoms, the area of Spain would increase by 12 per cent, the Balearic Islands would gain some 200 per cent, Italy would gain practically the whole of the shallow Adriatic in the east and appreciable littorals in the west, Sicily would adjoin Italy and gain more than 100 per cent, especially in the south by acquiring Malta. Corsica and Sardinia would form one island of almost double their present area, very close to Tuscany. The Greek Islands would come to Greece, Asia Minor would gain substantially, the Dardanelles and the Bosphorus would perhaps be closed. The northern coastlands of Africa, especially of Tunisia, would be increased. The Suez Canal would cease to exist as such, but Gibraltar might still remain the guardian and key of the Isthmus. The Atlantic waters could still be allowed to enter in a very limited quantity to drive a set of isthmian turbines in a series of super power stations, generating enough current to supply all north-western Africa and south-western Europe, which are poor in coal and other fuel, and to run the isthmian railways between Europe and Africa.

But these visions of the engineer will remain idle day-dreams for a long time, unless they share the fate of Rohlf's and Roudaire's projects. Only in a united Europe and a pacified world could such a feat of engineering be attempted. The money spent on European armaments since the end of the war which was fought to end war, or even what was spent from 1920 to 1930 alone, would probably have paid for the Great Dam several times over, and would now be producing fantastic profits, instead of fear and the feeling of insecurity.

To complete the picture, we must indicate how long such a dam might be expected to last. It would probably be a good many miles broad and it would rise a hundred

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feet or so above the level of the Atlantic. The stability of such a broad dam of such small height would be very great. Even very powerful seismic disturbances would leave it practically intact.

But slowly, imperceptibly, our Moon approaches the Earth, and its powers grow. The waters of the Atlantic rise, and the Eurafrian Isthmus must be built higher and higher. At last it has to be abandoned. Perhaps it collapses suddenly—and then the cataclysm of 11,500 B.C. is repeated. The cultures in the Eurafrian Basin are once more annihilated, and only a few individuals escape. Perhaps the population can be warned in time, even in cases of sudden emergency. Then safe regions can be reached by most, if not all, and from the heights of the Atlas Mountains and the Spanish Sierras and the Apennines the refugees see their lands disappear, and the end of one of the greatest achievements of humanity.

Myths Relating to the Time when the Mediterranean was formed

The first land to be submerged by the Mongolian deluge was 'Aegea', the land now covered by the Aegean, the first sea to form. In Greek myths we still find traces of the time when the turbulent waves surged out from the east. The name of the Aegean Sea is itself descriptive: it is derived from *aissō*, to move rapidly and jerkily, to surge up, to flow violently. At present the Aegean does not deserve that name at all, for it is generally remarkably peaceful, more so, perhaps, than any other part of the Mediterranean. The waters buried the fertile lowlands and valleys and left only the mountain tops "above the waves as islands—the Cyclades, grouped 'round' Delos, and the Sporades, 'sown' broadcast elsewhere in the Aegean.

And again, as in certain other deluge myths quoted in

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this book, those who escaped to the hills saw to their amazement that their refuges rode the waves like ships. According to a tradition current among the ancient Greeks, the island of Delos, to which Leto escaped, 'conducted' by wolves, drifted through the troubled waters of the newly formed sea till Zeus anchored it that it might serve as the birthplace of his children Artemis and Apollo. The Egyptian myth of the early youth of Osiris is similar and belongs to the same class. Osiris was brought up by the goddess Buto on a drifting island, or, according to another version, on a 'floating lotus flower'. Rhodes, too, is described as having drifted before it became fixed in its present position. Delos is only a very small island, the smallest indeed of the Cyclades, but it must have been smaller still at the time of the Mongolian deluge, for several myths describe it as a rock only, while others say that it was raised to its present height by Poseidon.

Apart from the important floating island feature of these Greek myths there are some other peculiarities which directly point to the capture of Luna, that is, to the first appearance of the Moon. Leto bore Zeus twins, but Artemis was born a day before Apollo. Artemis had very strong lunar attributes and was the Greek Moon-goddess before Selene. Artemis became one of the most powerful of divinities, which also points to her being associated with the important new luminary. Moreover the Apollo worship became suddenly important as a counterpoise. Jealous Hera, enraged at her husband's new unfaithfulness, sent a dragon, Python, to kill Leto and her offspring, but Apollo slew it. This is a very clear indication of the tailed Moon as it appeared after the capture, and the eventual loss of its tail. The full-moon and new-moon days were held sacred to Apollo.

The number of 'floating' Aegean islands is augmented by the Symplegades, or Cyanean Rocks, in the Thracian

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Bosporus, which appear in the story of the Argonauts. They were two cliffs which 'moved' on their bases, and crushed whatever sought to pass between them, or, according to another version, they floated about and only crashed occasionally. These movements, of course, can only have been due to an optical illusion, but probably dangerous whirlpools existed at this place, caused by the waters rushing west. By the time Jason sailed on his quest for the Golden Fleece the floods from the east had practically subsided. When the Argo passed, the Symplegades remained fixed in their places, for the waters had attained a certain stability of level. The story of Scylla and Charybdis, the latter of which sucked the sea-water in thrice a day and thrice a day spouted it forth, has a similar explanation. The narrow Straits of Messina must have been full of dangerous currents and whirlpools, besides being seismically disturbed.

One of the most striking myths preserved in the Tale of the Argonauts is that which deals with the creation of the island of Kalliste (Thera, Santorin). The hero Euphemos, himself a son of Poseidon, had received the strange present of a clod of earth from the sea-god Triton. After a great 'sea-storm' he threw it into the waves, and before the astounded crew of the vessel it grew to the dimensions of an island, the most beautiful (*kallistos*) the Argonauts had seen on their long voyage. Subsequently it became the home of Euphemos and his descendants.

This myth, as we have already said in an earlier chapter, is a unique Aryan example of the popular tales of the North American Indians dealing with the re-creation of the Earth, or the creation of continents or islands, by means of magical coercion. The waters of the newly formed Mediterranean or 'Levantine' Sea had found a way out farther west and were subsiding, now the mountain tops of the lost country emerged as islands. This subsidence

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is not only proved by the emergence of Kalliste, but also by the receding of the waters from the coastal districts. Thus the ship *Argo* had been driven by a 'storm' into the Syrtes, and became trapped in one of the inlets which was transformed by the falling sea-level into an inland lake, a shat. The heroes then took their gallant vessel on their shoulders and carried it for twelve days and twelve nights till they reached the Tritonian Bight in the Syrtis Minor. But it proved difficult to escape even from this, and it was only after the sacrifice of the heaviest tripod in the ship that the sea-god Triton showed them the way out. Evidently the idea was to lighten the vessel, but it would also seem that the waters rose again, for, we are told, Triton took the tripod, which had been left standing on the shore, 'on his shoulder and disappeared with it in the waves', in other words, the waters rose over it.

Triton, a son of Poseidon and Amphitrite, is, as his name shows, a personification of the roaring, storm-tossed waves. It is therefore quite natural that he should be the agent in the flooding of the Tritonian Bight and the emergence of Kalliste or Thera.

The vessel of the Argonauts was again trapped on the outward journey. When they anchored in a harbour in the island of Kyzikos (Cyzicus) near the Phrygian coast, which was inhabited by the Doliones, descendants of Poseidon, they could not leave it again, because 'certain uncouth giants had blocked the mouth of the harbour with rocks'. In reality the waters had fallen and a rocky bar had risen between the harbour and the sea.

In the Tale of the Argonauts volcanic phenomena are very frequently and prominently introduced. Talos, the brazen guardian of Crete, who hurled rocks at strangers intending to land, who, if they did manage to reach the shore, heated himself red-hot and ran towards them to clasp them in his fiery arms, and who, when Medea cast

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her spells over him, stumbled over a pointed rock and died, his blood gushing like molten lead from his wound, falling into the turbulent seas with a deafening roar this Talos represents a vivid picture of a coastal volcano in eruption The Argonauts also passed Mount Etna where Hephaistos had his forge They passed the shores of the Mariandyni in the Thracian Bosphorus, where the 'entrance to the lower world' was situated They heard the 'groans of Prometheus' (seismic phenomena) They sailed up into the innermost bight of the Eridanos and came to the place where Phaethon had fallen, and which was still emitting flame and smoke

The Eridanos was a problem even to the ancients It was finally identified with the river Po, though this is the most important river which falls into the Adriatic, it is nevertheless inadequate We shall probably be right in surmising that the mythical Eridanos is to be found in the Adriatic Valley whose 'river' or fiord was being filled up to the dimensions of a sea With the complete submergence of that 'valley' and its recognition as a sea, the name of Eridanos was at last given to those parts of it which were still a river, to the Po The name the Ligurians are said to have given to the Po, Bodineus, 'the Bottomless', now also gains in significance It is utterly wasted on the slow and shallow Po

We have reason to surmise that the Tale of the Argonauts is a collection of the traditions of adventures of various seafarers on the uncharted wastes of the newly formed Mediterranean It has always been regarded as the great sailor epic of Greek literature, and, furthermore, as spinning a number of truly sailorlike yarns which try the patience of the most credulous landsman We now begin to see it in a clearer light Pindar, Apollonius Rhodius, pseudo-Orpheus, and the others who treated the Saga of the Argonauts, used the old tales, adorned them with

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new heroes, and furnished them with an heroic quest. Argos, the son of Phrixos, who joined the Argonauts on their *return* voyage, mentions old priestly writings regarding a certain 'waterway', evidently a report of early explorers. These have disappeared, with others, the names of the ships and their captains are lost in the waters of oblivion, but in full chords, from the poet's lyre, sounds over the ages the grand tale of the 'swift keel' Argo, the first long-ship in which the Greeks ventured away from their coast into the unknown new sea, and of Jason, the 'Clever One', the father of navigation.

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The satellitization of Luna not only caused the waters of the oceans to be drawn into the tropical belt and the air-coat at the poles to become more threadbare, it also subjected the Earth's crust to a considerable strain. The Earth's surface looked, in many parts, like the streets of a city after an earthquake shock: the smooth surface of the roads and squares has become cracked, large slabs have become slightly tilted, some parts have subsided, others have been raised. If this damage were never repaired one could approximately tell, from the natural levelling-down process caused by the weathering, at what time the earthquake wrecked the city.

We can draw the same inferences from nature. We can find the approximate date of the capture of Luna in the geological records of that age. The readiest and finest example is that furnished by the Niagara Falls.

The Niagara River is a problem to hydrographers. In spite of its great volume it has no 'valley'. Therefore it cannot be an old river but must have been formed at a comparatively very recent date. Many scientists connect its formation with the end of the great Glacial

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Period, during which all Canada was covered with a sheet of ice

According to the Cosmic Ice Theory, there were two more recent extensive glaciations of the terrestrial calottes. The infinitely greater one, that of the late Tertiary Age, which at times even reached down to about the fortieth parallel of northern latitude (line San Francisco New York Madrid Constantinople Pekin) is far too remote, it would attribute an age of certainly not less than 200,000 years to the Niagara River, which is inadmissible on hydrographic grounds. The other, that of the Quarternary Ice Age, which came in the train of the great climatic breakdown caused by the impoverishment of the terrestrial air-coat through considerable losses into space at the capture of Luna, agrees exactly as to time and extent, but it can only be regarded as incidental, not causal. We are on quite safe ground, however, if we say that the Niagara River was formed as a new overflow from Lake Erie to Lake Ontario, by a gentle, almost imperceptible tilt in the eastern part of the great plateau which bears the Great Lakes, causing Lake Huron to discharge more water into the cul-de-sac Lake Erie, and less water directly down to Lake Ontario or the Ottawa River valley.

The deforming strains to which the terrestrial lithosphere was subjected at the capture of Luna not only produced this slight tilt, but also caused the great plain to break at a weak line and to form a high cliff or escarpment over which the newly formed river fell. In this area a stratum of hard limestone, some 60 feet thick, overlies soft shales (one reason for the weakness towards the lunar strain), the waters of the original Niagara Fall(s) undercut the limestone, causing it to fall, and thus making the site of the cataract retreat slowly upstream.

Many attempts have been made to determine the time

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the waters needed to cut out the gorge below the present Falls. From various determinations of the rate of the cutting back it has been calculated that the river needed for its work a time between 5000 and 25,000 (Lyell 35,000) years, the average being about 15,000 years.

This figure tallies very remarkably with the figure obtained, from mythological considerations, for the capture of Luna. It is the most important geological contribution to this subject.

While the Niagara Falls are the best-known falls in the world, the Victoria Falls of the Zambezi River are the largest, and the most enigmatic. The mighty Zambezi River flows, for a considerable distance, over a level sheet of basalt, its hardly perceptible valley being formed by low and distant sandstone hills. At a place where the Zambezi is well over a mile broad it falls abruptly over the edge of an almost vertical chasm, 300 feet deep. Unlike the Niagara Falls, the water does not descend into an open basin, but is arrested at a distance of from 80 to 240 feet by the opposite, equally abrupt wall of the chasm. The Falls are thus formed by a huge transverse crack in the bed of the river. The narrowness of this crack makes the mighty Falls an extremely disappointing object for the tourist, and a most puzzling one for the hydrographer. Below the Falls the enormous water masses are pent in by almost perpendicular walls over 400 feet high, forming a gloomy canyon over 40 miles long, but in certain places not more than a hundred feet wide.

This unique canyon cannot possibly be the result of erosion. It starts abruptly in a great basalt sheet and ends at its edge. The walls of the gorge are so little worn that the possibility of the canyon having been formed by any back-cutting action of the Zambezi waters is quite out of the question. The Zambezi canyon is a crack in the Earth's surface, and a very 'recent' one, too, and it has been

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formed by forces working in or on the Earth's crust. At a bold guess we may attribute its formation to the same time as the Niagara Falls, and to the same cause—to the capture of Luna, and the great strain to which the tropical girdle was subjected.

There are many evidences that the great South African Desert, the Kalahari, was not always what it is now. It is a country suffering from progressive desiccation. Thirteen thousand years ago it may have been a tropical paradise. Changes of level threw the Upper Zambezi and part of its system out of action, or diverted it. The Kalahari is still furrowed by a considerable number of dead river beds, some of which must have carried prodigious water masses towards the Zambezi or some other prelunar river system. The hydrographic changes caused climatic changes, a slow but rapidly increasing desiccation began, and the dying vegetation caused animals to emigrate—and man, too. The dead desert remained, like the Gobi Desert and the mesas of Colorado.

Another remarkable geological phenomenon, of a different kind, is the Congo Fiord. The mighty Congo, greatest of African rivers and second in the world only to the Amazon, collects its water masses in a gigantic basin. In its course it is several times disturbed by cataracts, which seem to be of not so very ancient date, and nearing the Atlantic it has to force its way through the African coast range, the Crystal Mountains, where it is pent in to a width of about half a mile, while its depth increases rapidly. Below Matadi, some 85 miles from the coast, the river is already from 270 to 360 feet deep. Some 30 miles from its mouth the depth increases to about 900 feet. This is unique—but it is not the most remarkable feature. For this submerged canyon—it is nothing less—can be traced in the wide estuary, where it is over a thousand feet deep, and the most extraordinary thing is that it

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is continued out into the open sea for another hundred miles or so, showing depths of as much as 4000 feet below the general level of the sea-floor!

As no river can go on gravating its channel deeper when it has reached the sea, the original mouth of the Congo River must once have been situated at least a hundred miles farther west, and at least 8000 feet 'higher' than now, that is, 8000 feet *above the former sea-level*. The submergence must have been sudden, and quite recent, for, if the land had sunk imperceptibly slowly for many millions of years, the submerged canyon or channel would have long ago been filled with silt, sand, and other sediments—whereas the Congo waters, below the Stanley Pool, are remarkably clean. The west coast of Africa must therefore have been suddenly plunged into the sea, or, as no evidence of such a descent can be found, the sea must have suddenly risen 8000 feet and more. Only if we accept the capture of the planet Luna, some 13,500 years ago, as having caused the submergence of the Congo Canyon or Fiord, can we explain its present existence below sea-level.

It should be mentioned that the Congo River did not grave the deep canyon into the granite of the coast mountains; this was the work of the girdle-tide of the Tertiary satellite; the Congo only washed this previous fissure deeper and smoother.

The Stanley Pool, 20 miles long by 14 broad, was only formed at the capture of Luna. The Congo River brings down a lot of sediment from its upper course, which it deposits in the Pool, for, when it leaves on the other side, the water is incomparably cleaner. If the Stanley Pool were considerably older than the time when Luna became the satellite of the Earth, it would long ago have been filled up with sediment, and the filling of the Congo canyon would have been much more advanced.

We must not extend this chapter much further. The few

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indications given, however, will no doubt enable the reader who takes an interest in geology and geography to proceed in the right way

The present face of our Earth was shaped in the Tertiary Age. The capture of Luna only gave it certain later features which are familiar to us.

The 'shelves' surrounding the continents show many furrows, or long narrow grooves, entrenched in them—the courses of rivers of the prelunar age, when those shelves were not yet submerged. Among the best known of these valleys of long-lost rivers, or extensions of still existing ones, are to be counted the Cape Breton Deep in the Bay of Biscay, the Hudson Furrow, southward of New York, the swatch of No Ground off the Ganges delta, the Bottomless Pit off the Niger delta, and the Congo canyon which has already been noticed at large. The Ganges and Niger examples, especially, show that the submergence of the lowest parts of their courses must have taken place within comparatively very recent times, for they carry tremendous masses of sediment and yet have not completely obliterated the lost parts of their lowest courses.

The course of the Rhine may be followed far up north along the east coast of England. The Thames was once a confluent of the Rhine. But the submergence of the land mass now covered by the waters of the North Sea was not due to the Capture Flood, but to later, more slowly working deformative stresses of the lunar gravitation. This complex of questions cannot be discussed here in detail.

Many lakes which are at present far away from the sea and have no connection with it contain animals of marine type—jellyfish, molluscs, prawns, crabs, etc., in the great African lakes, fishes in Saharan lakes which are otherwise only found in the Gulf of Guinea, sharks in Lake Nicaragua, the Sahara crocodile, though not a marine animal, and so on. This is taken as evidence that at one time arms of

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the sea extended so far inland. A much more natural explanation is that the Capture Flood, rushing over the tropical belt, flung them there. The lacustrine forms are not so very different from the marine forms as to force us to suppose the Great Flood, the flowing off of the girdle-tide, responsible for this distribution.

There are two types of volcano—active, and extinct. The latter type may be subdivided into two classes: long extinct, and recently extinct. The long extinct volcanoes are those whose ruinous cones date from the closing period of the Tertiary Age, when the conditions during and immediately after the breakdown made volcanic activity run very high. (At that time also were formed the huge basaltic flows—of North-East Ireland and the Hebrides; of Oregon, Nevada, Idaho, Washington, etc.—which were slowly squeezed out through fissures and spread like a tough flood.) The recently extinct volcanoes were piled up when Luna was captured, and became extinct in the earlier or later millennia of the new age. The active volcanoes are all ‘young’. That they, and the recently extinct ones, are situated along lines of fracture in the terrestrial crust, is not surprising. Only we must remember that these lines were not caused by the Earth’s crust breaking under the strain of a ‘secular contraction’, but under the deforming influence upon our planet of its new satellite Luna.

The Grand Canyon of the Colorado River, the most wonderful geological cross-section through the Earth’s crust which exists on our globe, is the last geological phenomenon we shall mention here. This huge gash cleaves an extensive plateau down to the Archæan bottom rocks. Together with the Marble Canyon, which is contiguous to its upper reaches, the Grand Canyon is more than 280 miles long. Between its upper cliffs it is from $4\frac{1}{2}$ to 15 miles wide, while its average depth is over one mile.

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This profound gorge is supposed to have been the work of the Colorado River which has washed and cut its way through the thousands of soft and hard strata during enormous reaches of time. This explanation, however, does not take into consideration the fact that the Grand Canyon cuts right down through geological formations of comparatively recent date to the schists of the Archaean Age. That would place the Tertiary and Cretaceous Ages in the extremely remote past, an idea which is contradicted by a great number of different evidences there and elsewhere.

The Grand Canyon was formed in the later part of the Tertiary Age, certainly not before the development of the post-stationary girdle-tide. If there had been a crack or a gash in the Earth's surface before this time, it would have been filled up by the strata-building tide-hills. Perhaps the terrestrial crust split there, from the newly laid down uppermost Tertiary deposits to the oldest igneous bedrock, at the same time as the African rift-valleys were formed—that is, at the time when the 'anchored' Tertiary satellite tried to break loose from its bollard, Africa. The post-stationary girdle-tide then surged over the Earth for thousands of years. It was those inconceivably vast water masses that washed out the fissure, at the bottom of which the Rio Colorado now swirls and roars as if it had made its own great bed. It was also the water masses of the girdle-tide that denuded the Colorado or Arizona Plateau, as well as all other peneplains in the world. The Grand Canyon, therefore, is the work of the Tertiary satellite.

Conclusion

We have now reached the end of our story. Half a thousand myths, given in full or alluded to, have told us of days of the dim past when catastrophes, the violence of which we can hardly comprehend, wrenched the Earth into a new form. These myths have also told us of a time of which, up till now, only geology, and partly astronomy, were supposed to have the monopoly of description and explanation.

This book has set out to interpret the old wonder-tales of the world from a new point of view. We believe that, in the light of its explanations, the old traditions have gained considerably in value. Abandoning the purely allegorical and non-natural system of interpretation, we have tried to disentangle from the myths the history of times otherwise forgotten, and the record of happenings otherwise unknown. Now at last we can see light through the imagery of the Edda, the mystic grandeur of the Bible, the strange word-painting of the myths in general.

Our method of approach is a new one. The cosmogonic theory which underlies it is unfamiliar. Nevertheless we hope that neither this theory nor the interpretation of the myths in the light of its teachings will be found improbable or unsatisfactory. The mythologist especially will no doubt be quick to recognize the importance of the unique key which the Cosmic Ice Theory offers him.

To the average reader, we hope, this book has given a fund of interesting information. The mythological material

Conclusion

contained in it will remain interesting even if our explanation of it should be proved nothing but fiction. Comparing the new and wide world-picture drawn by our theory, considering the distant and unexpected vistas thrown open by it—we do not fear for its fate.

The Cosmic Ice Theory is a cosmological theory based on technical considerations. Its teaching of the cataclysms is founded upon cosmic necessity and not upon the great myths. But, when it began to become known outside the small circle of cosmologists and astronomers who were first interested, some mythologists found that, on the one hand, the deluge myths and others gave vivid illustrations to Hoerbiger's impassionate deductions, and that, on the other hand, these myths gained tremendously in meaning when tackled with the aid of his theory.

In grateful recognition of the armoury of facts which this new theory of the heavens and the Earth placed at the disposal of the writer of this Book he wishes it to end with the name of him who conceived

THE COSMIC ICE THEORY

even

HANS HOERBIGER.

The author of this book wishes to express his thanks to the Hoerbiger Institute in Vienna for the generous use of its library and archives, and especially to its scientific director, Mr. E. Pigal, for much valuable advice. The writing of this book was also much furthered by the study of such valuable works as *Urwissen von Kosmos und Erde* by G. Hinzpeter, *Weltwenden* and *In mondloser Zeit* by H. Fischer, and *Hoerbigers Glacial-Kosmogonie* by P. Fauth

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